ENG23 2032 – OBJECT ORIENTED TECHNOLOGY

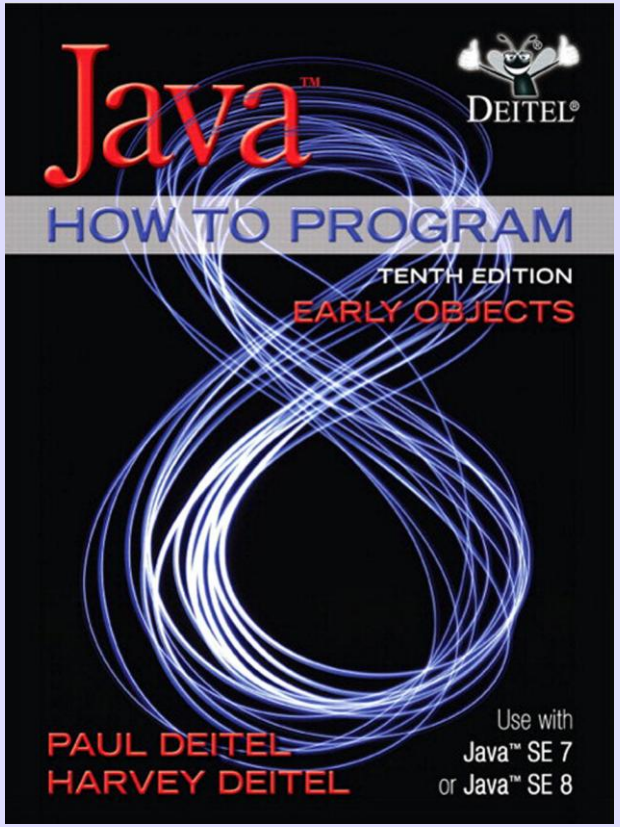
Week 01 : Introduction to OOP

Ratiporn Chanklan

Assessment

10%	Attendance
30%	Weekly Lab Assignments:
10%	Lab Tests:
10%	Lab Exam:
20%	Midterm Exam:
20%	Final Exam:

Indicative Reading



Paul Deitel and Harvey Deitel, *Java: How to Program (Early Objects) (10th Edition)*

What is Java?

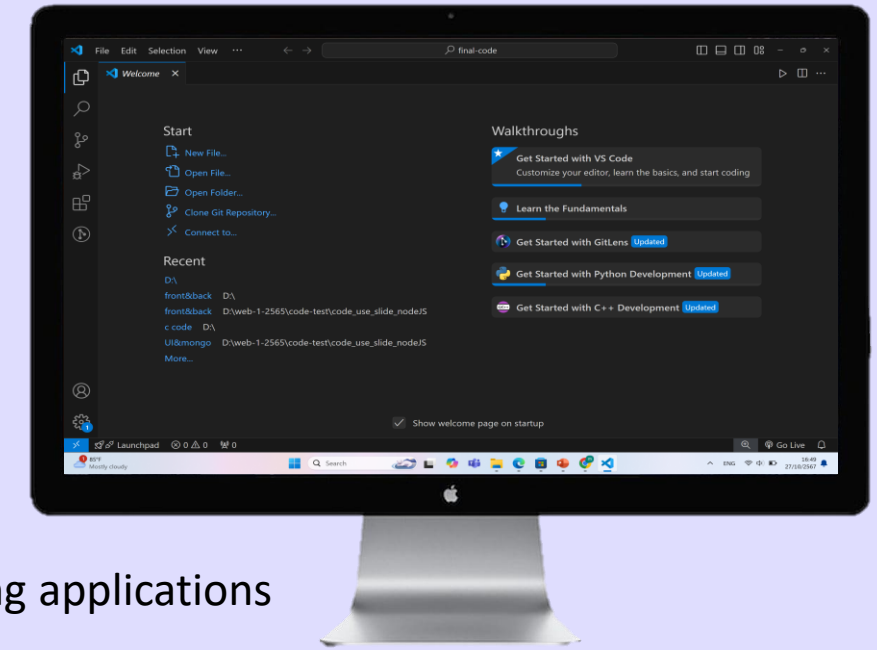
- Java is a popular programming language, created in 1995.
- It is owned by Oracle, and more than 3 billion devices run Java.
- It is used for:
  - Mobile applications (specially Android apps)
  - Desktop applications
  - Web applications
  - Web servers and application servers
  - Games
  - Database connection
  - And much, much more!

Integrated Development Environment (IDE)

VS CODE

Visual Studio Code is a source code editor.

https://code.visualstudio.com/



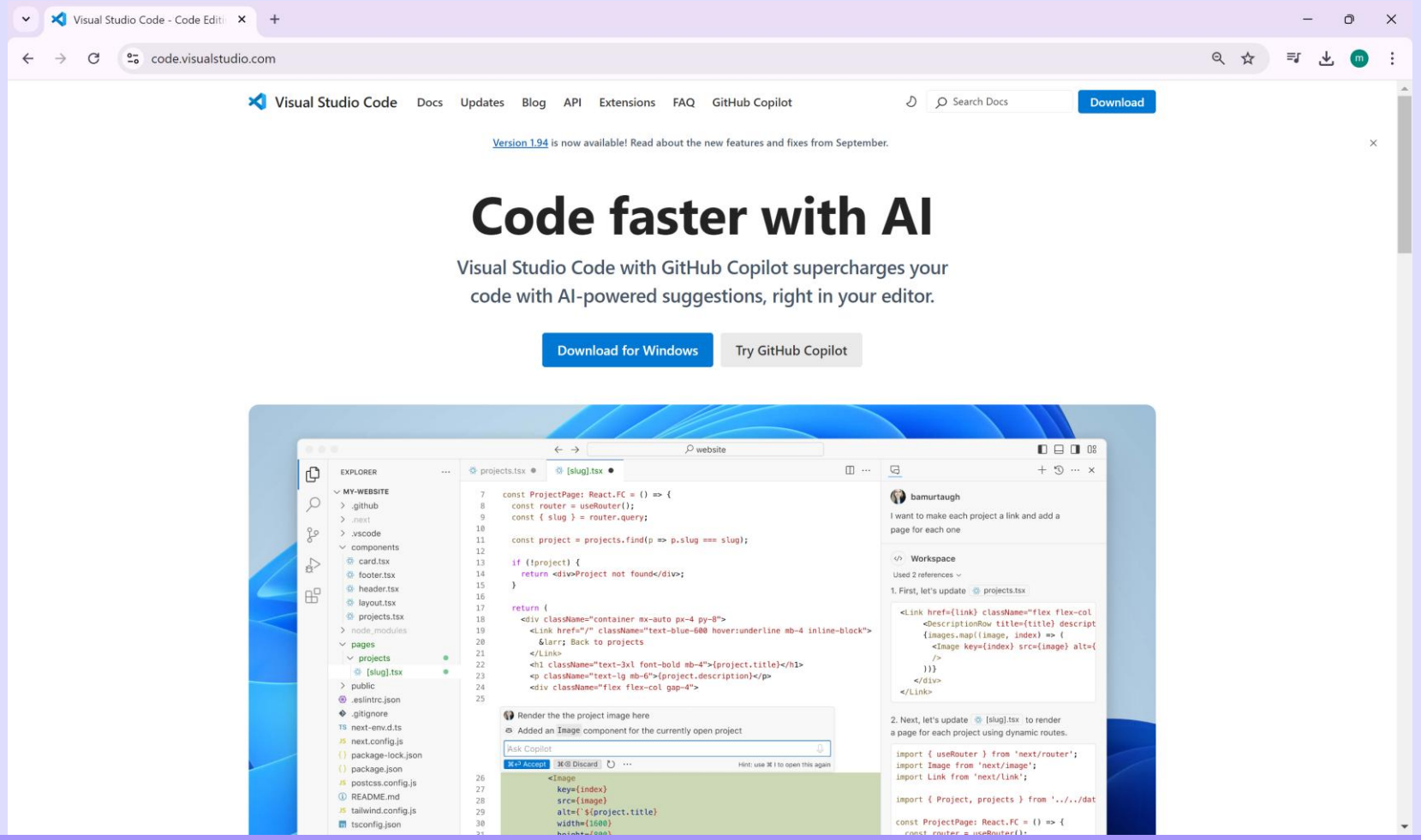
JDK (Java Development Kit)

The JDK is a development environment for building applications using the Java programming language.

https://www.oracle.com/java/technologies/downloads/

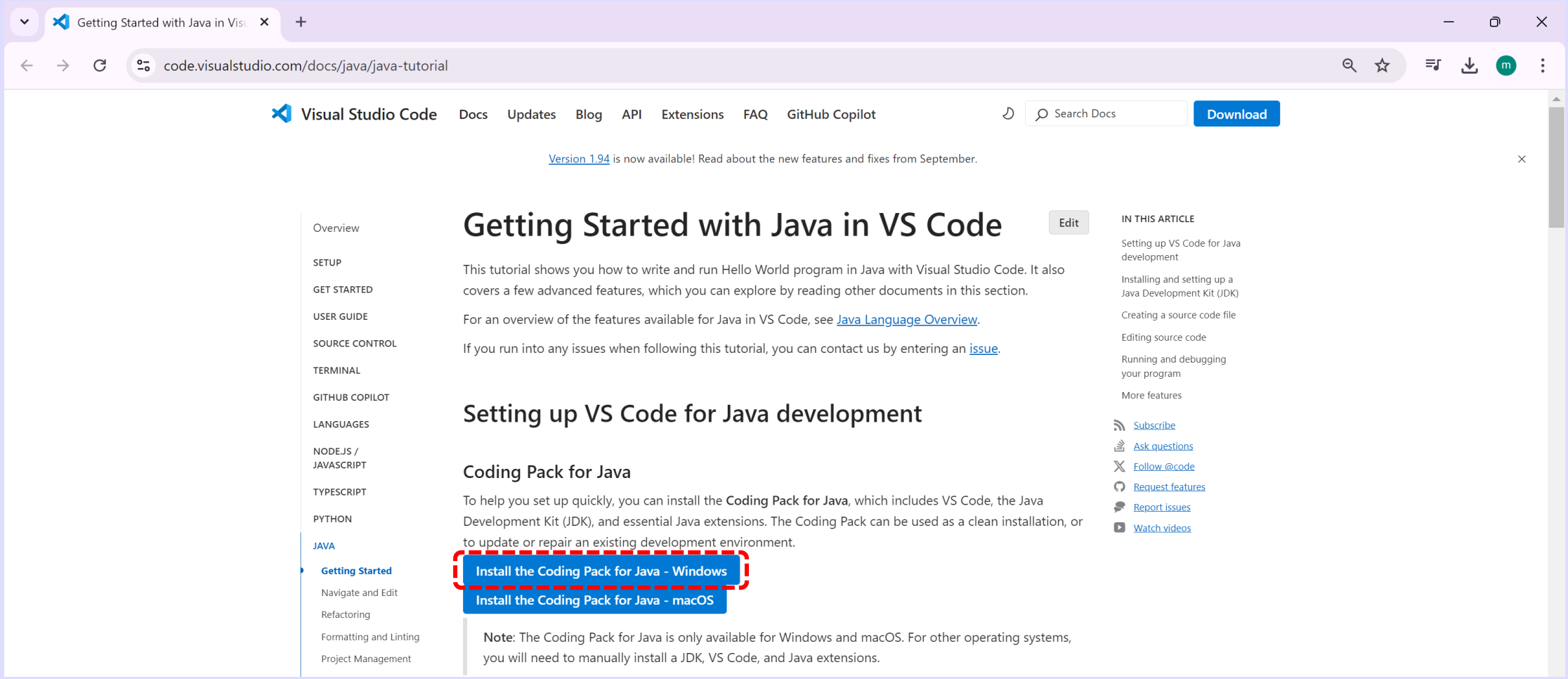
Install Visual Studio Code.

- VSCode Link:- https://code.visualstudio.com/



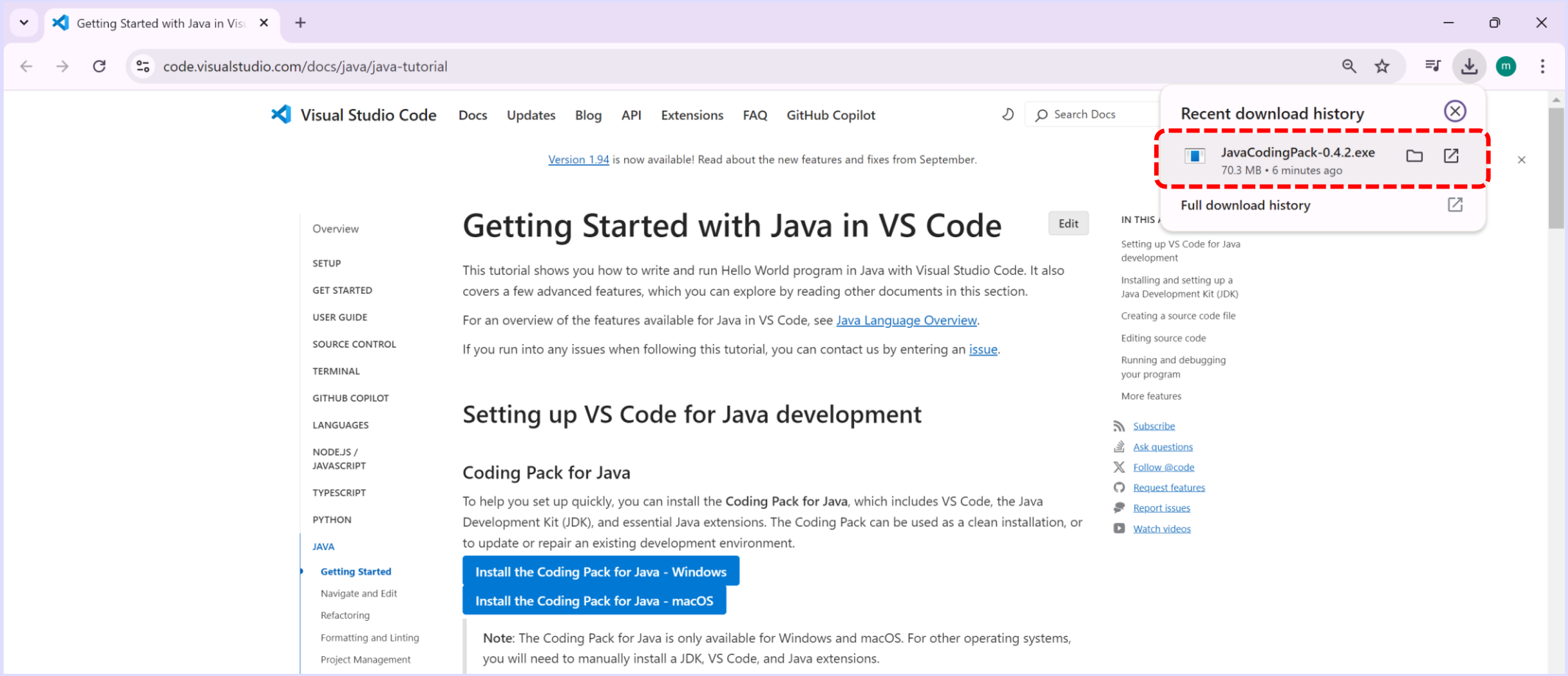
Install the Coding Pack for Java (1)

- https://code.visualstudio.com/docs/java/java-tutorial

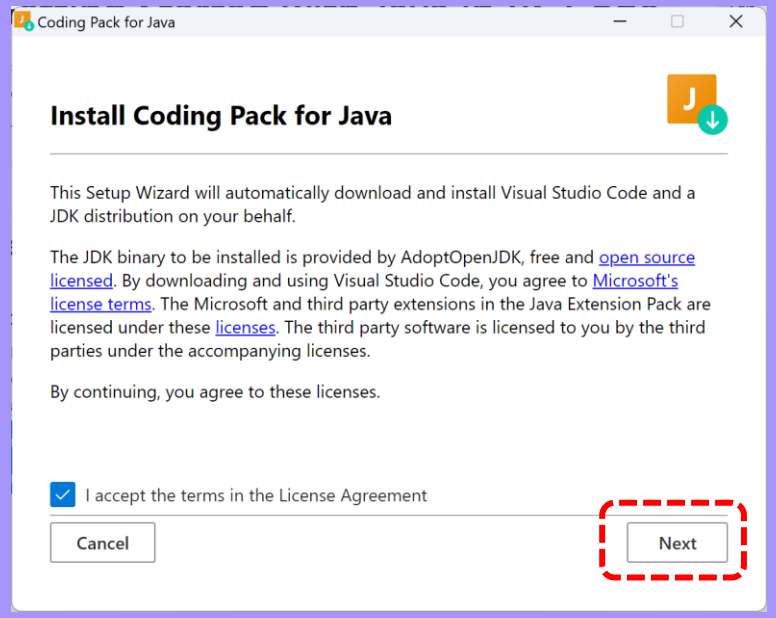


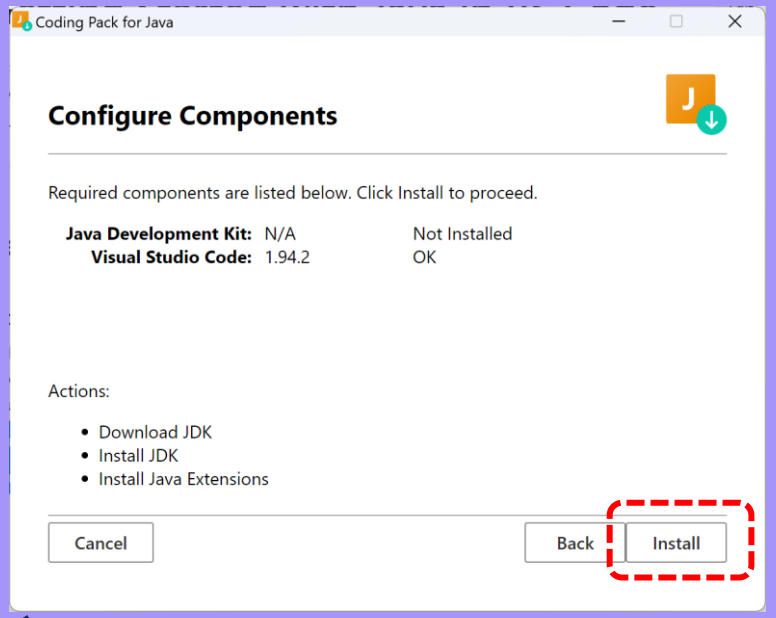
Install the Coding Pack for Java (2)

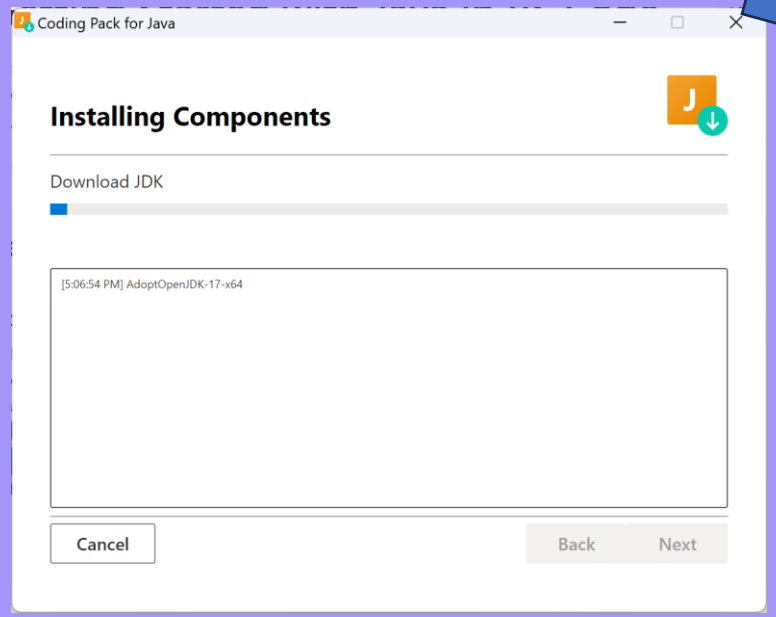
- Once you finish downloading the coding pack, click on the file to install it.

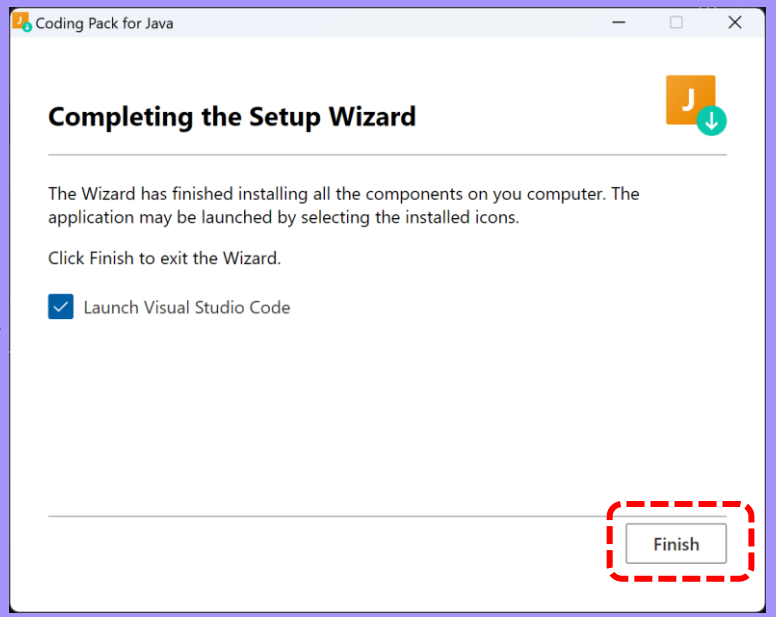


Install the Coding Pack for Java (3)



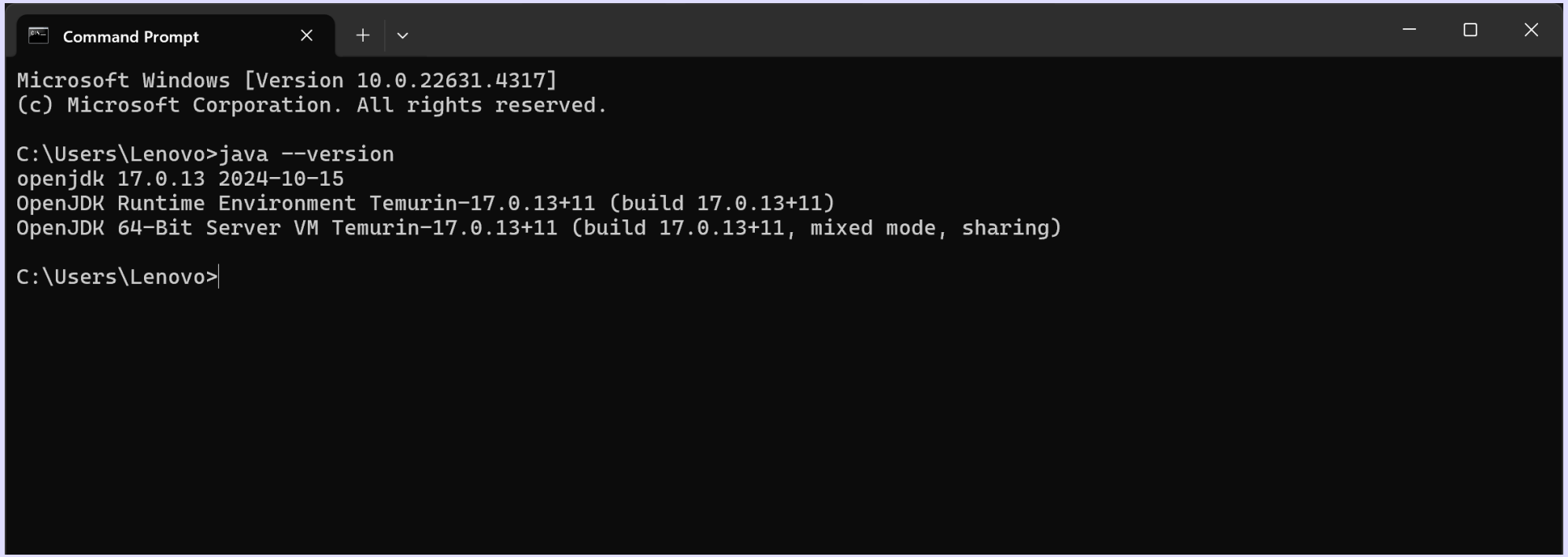






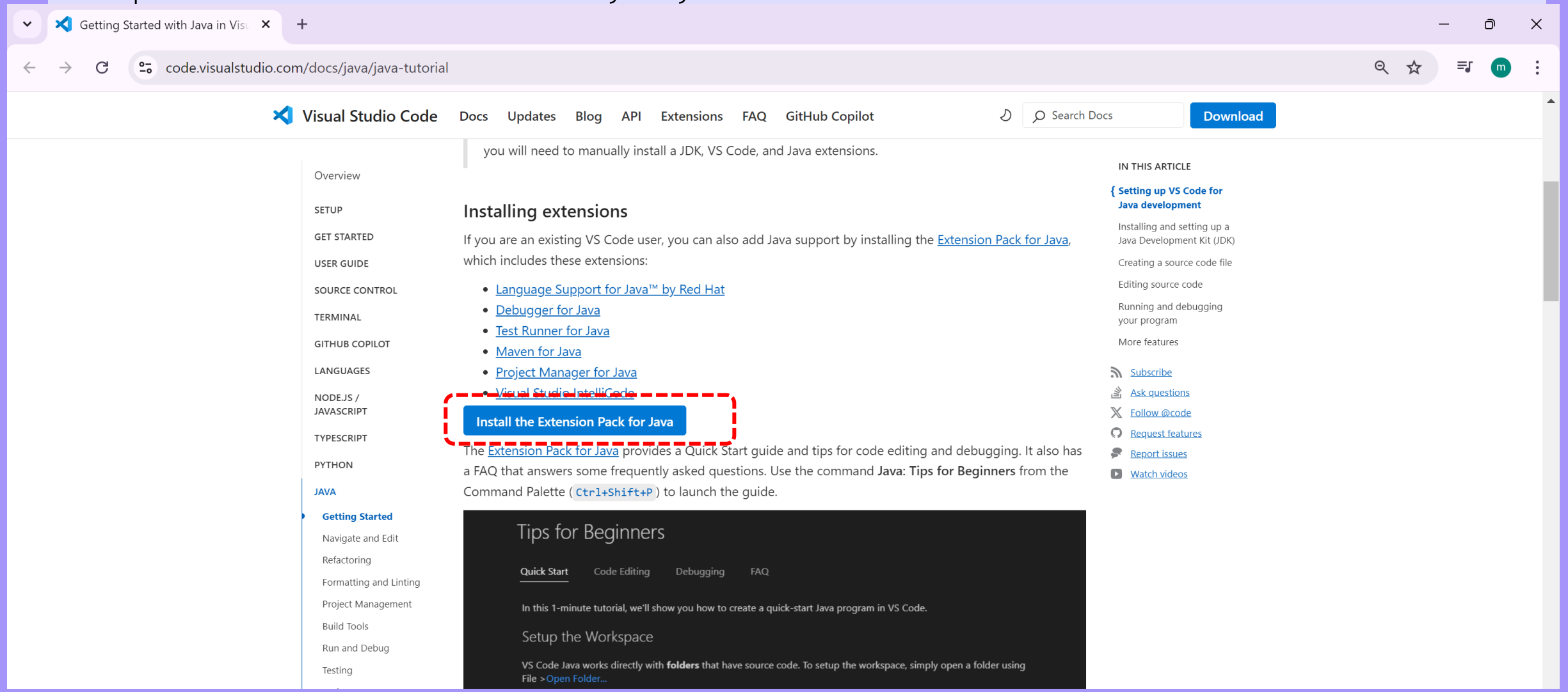
Check your the Coding Pack for Java installation.

- Click on a search type in CMD
- Open a new Command Prompt and type: java --version

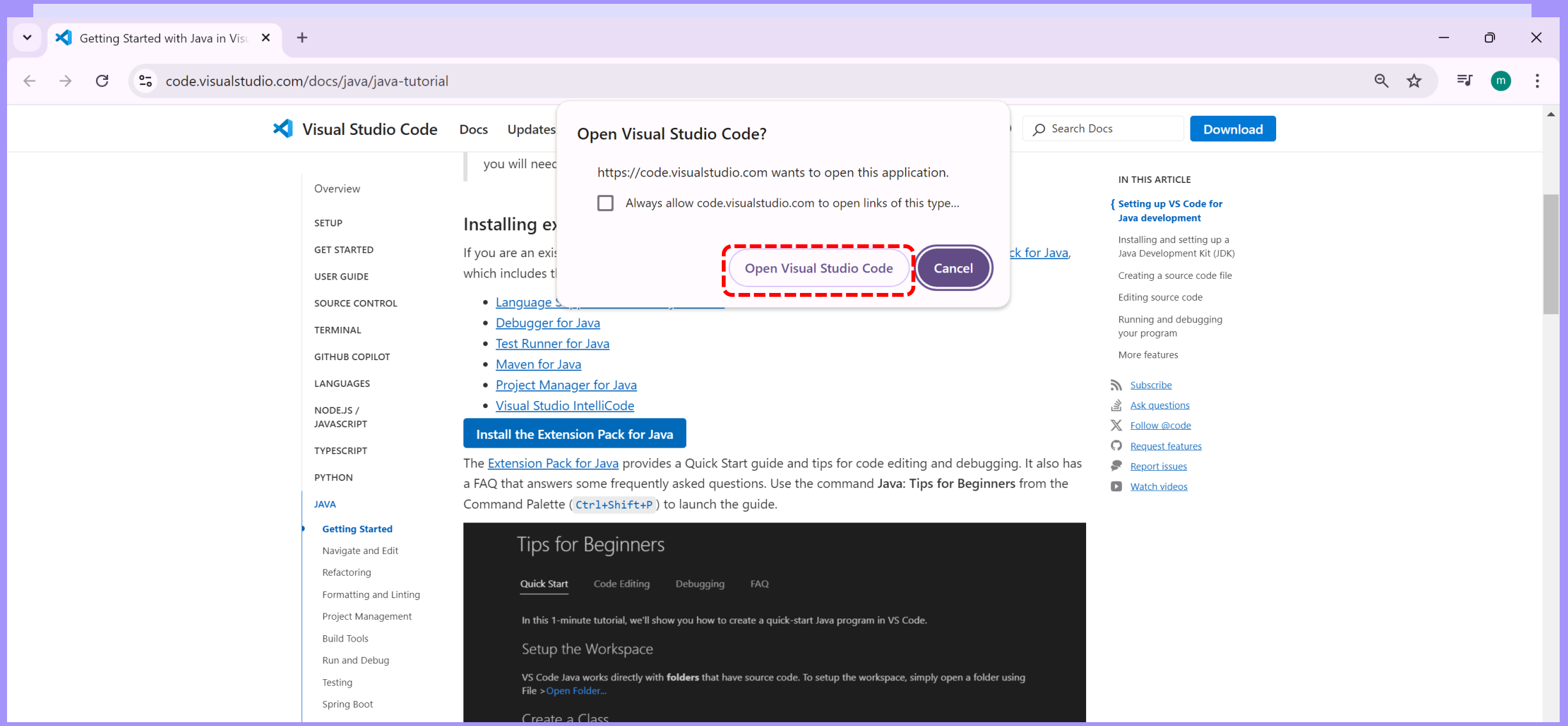


Installing extensions (1)

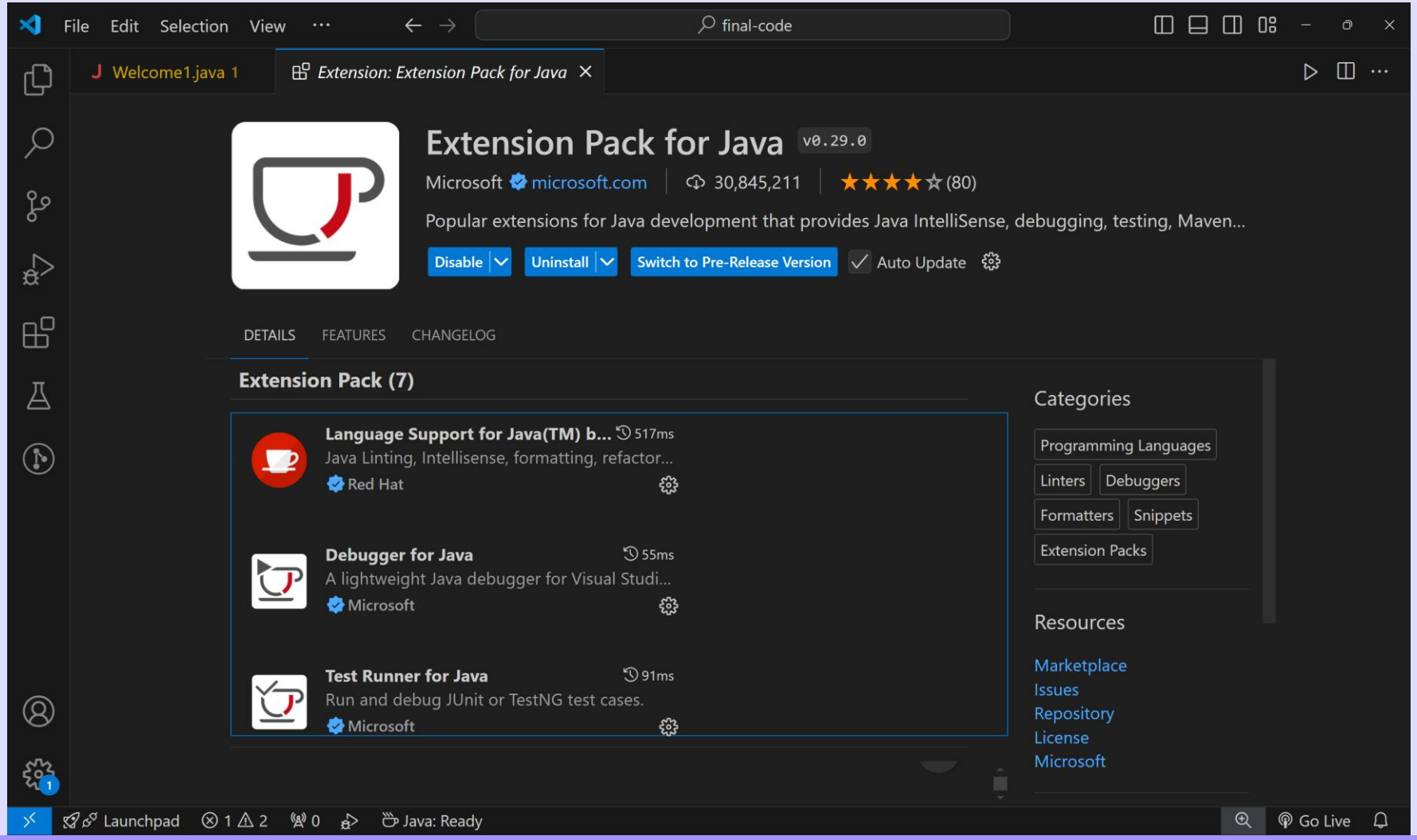
- https://code.visualstudio.com/docs/java/java-tutorial



Installing extensions (2)

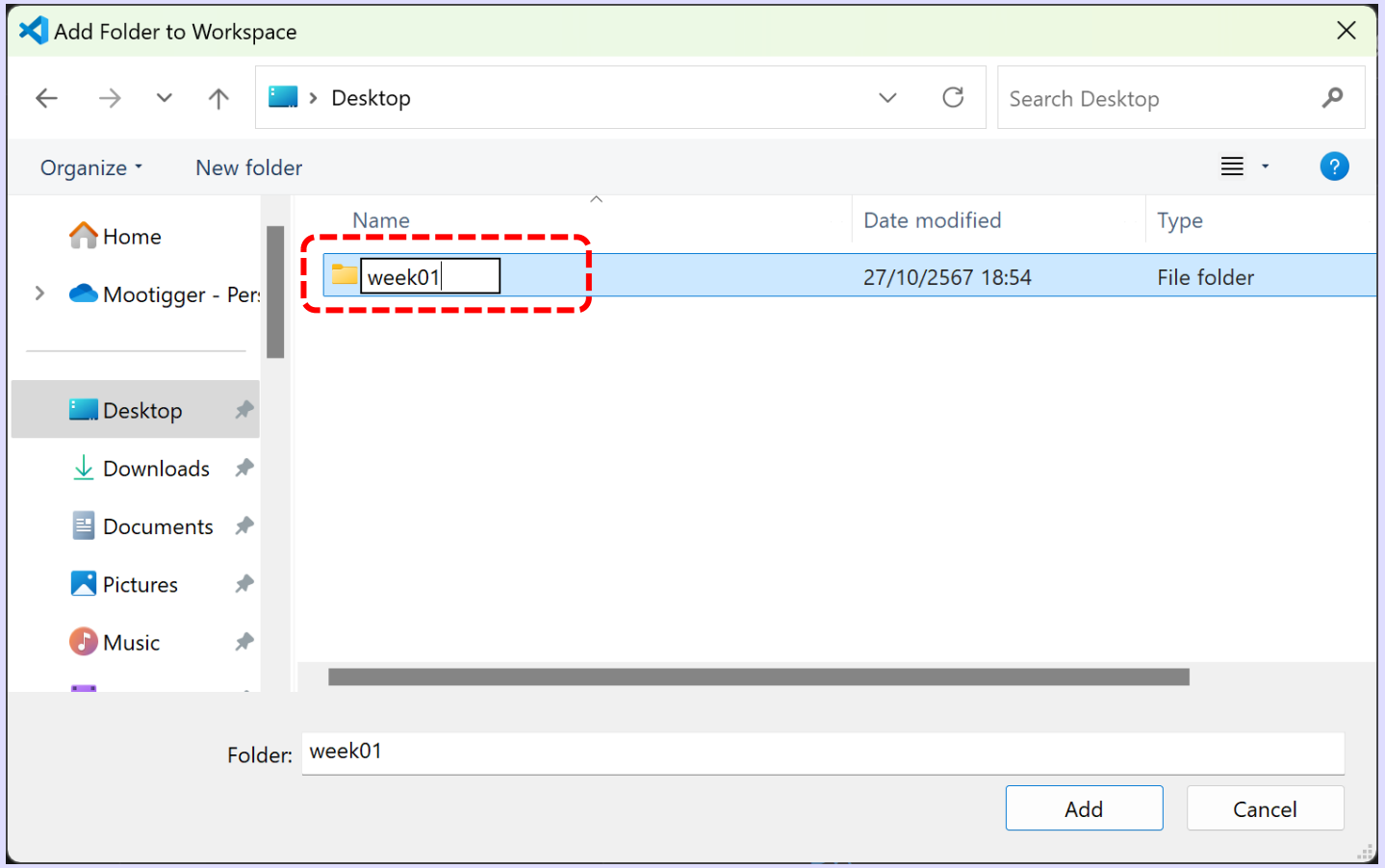


Installing extensions (3)



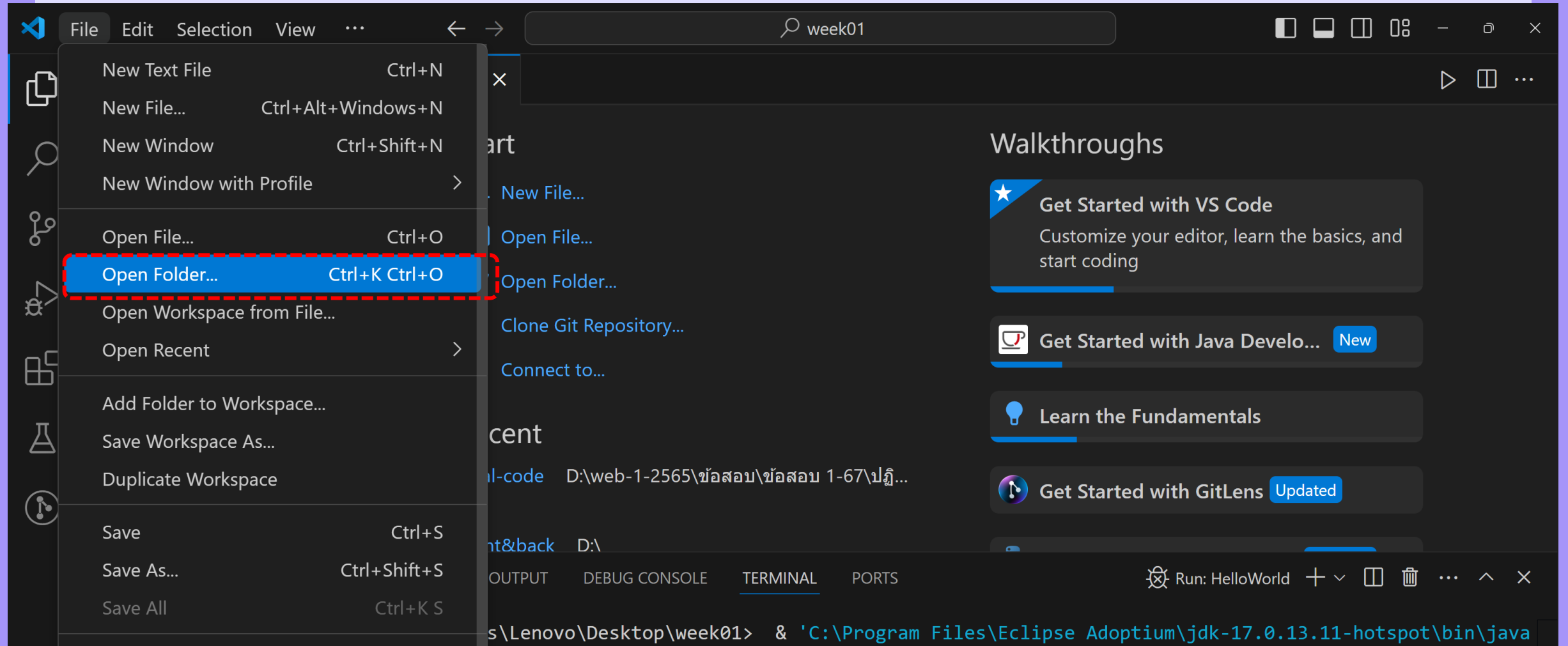
Creating a source code file (1)

Create a folder to save .java files.



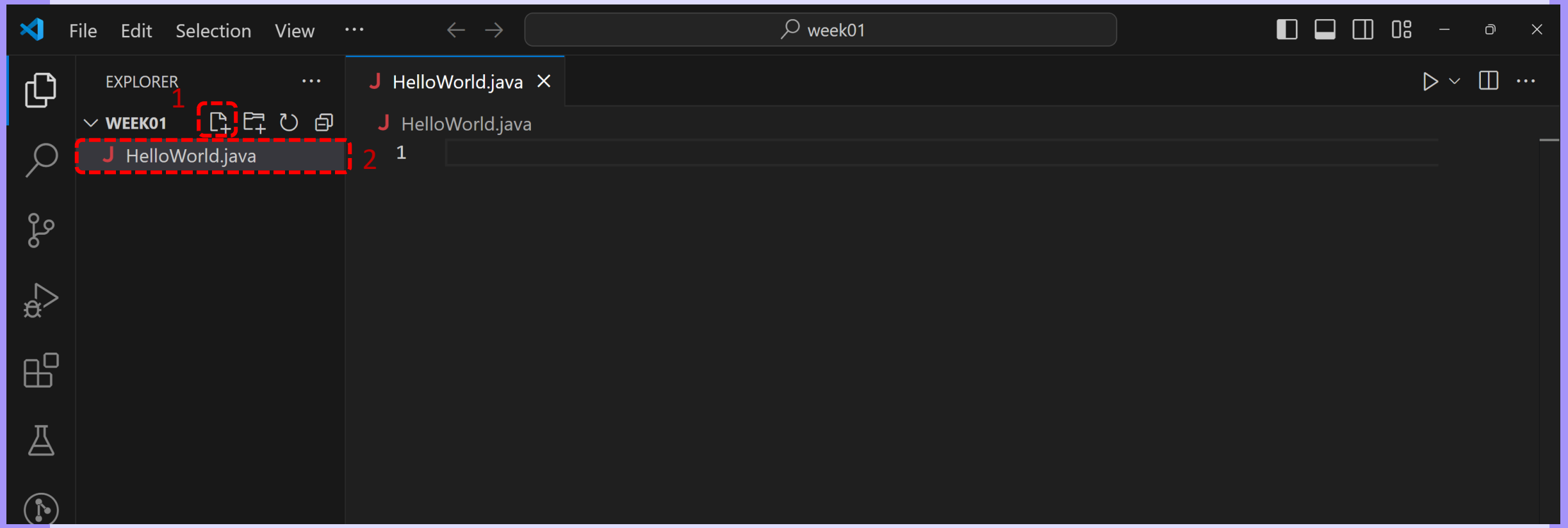
Creating a source code file (1)

- File->Open Folder...->select the folder you created before (week01)



Creating a source code file (3)

- create a new file and save it with the name HelloWorld.java.



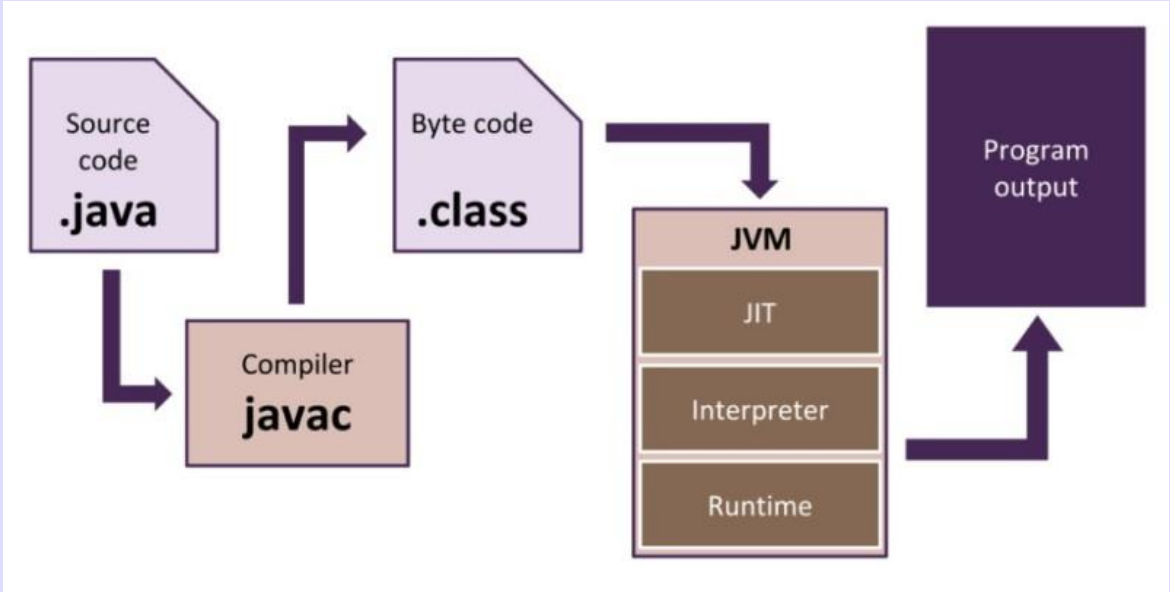
Creating a source code file (4)

- Input a source code in HelloWorld.java.

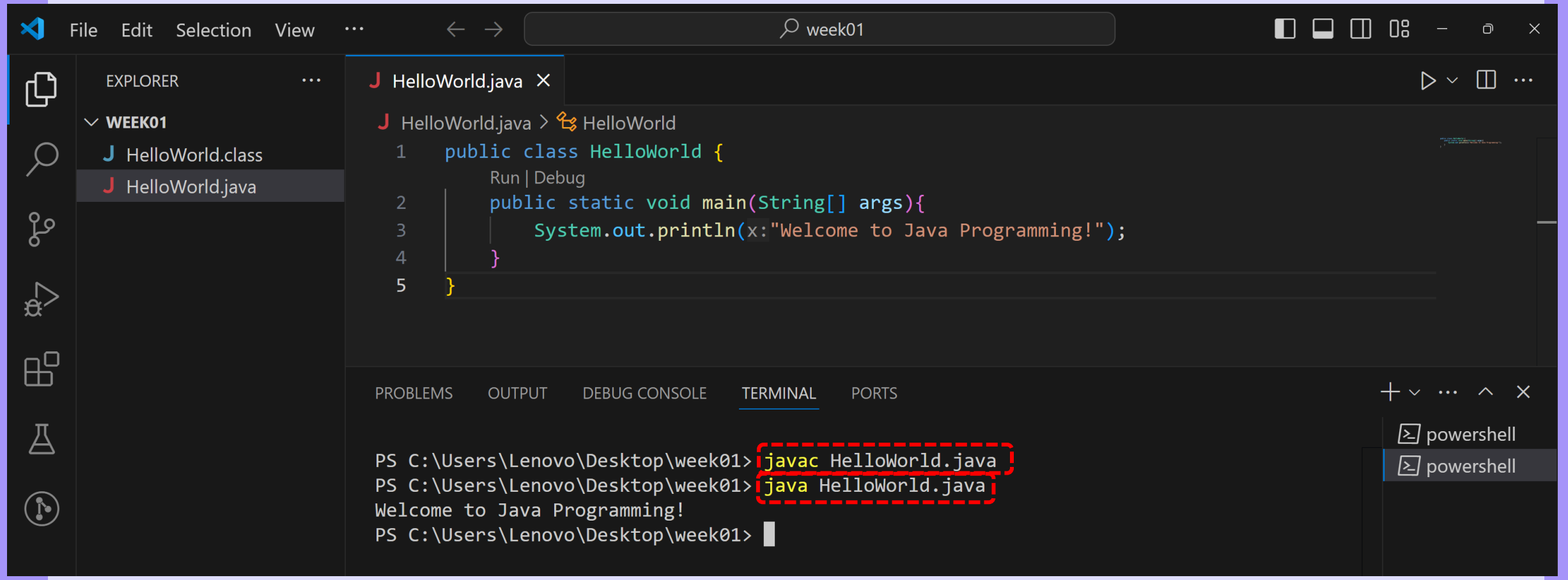
```
public class HelloWorld {
    public static void main(String[] args){
        System.out.println("Welcome to Java Programming!");
    }
}
```

Run .java

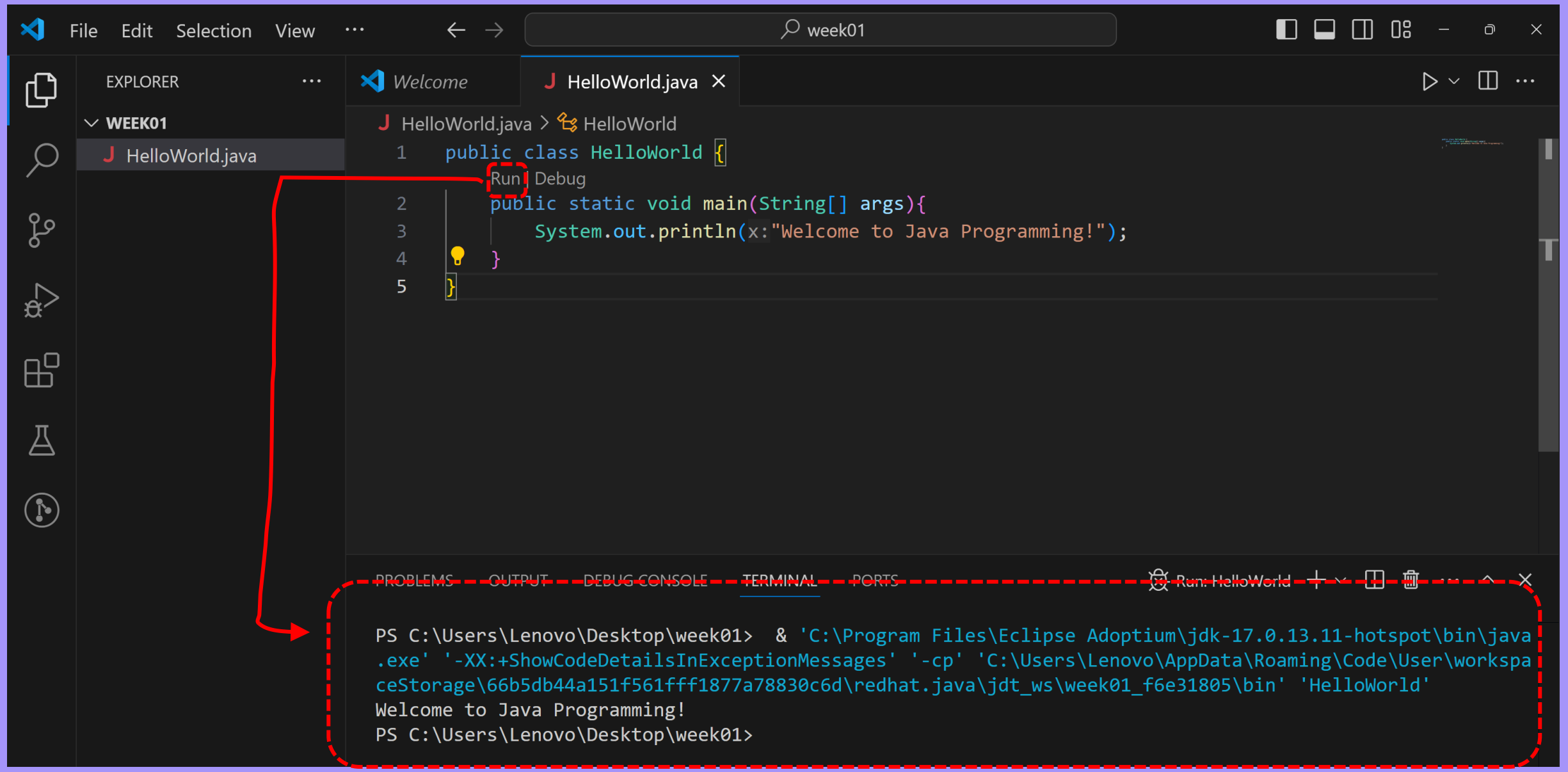
- type "javac filename.java": This will compile your code. If there are no errors in the code, the command prompt will take you to the next line.
- If there are no errors, It converting the code written in filename.java into bytecode (a filename.class file will be generated), which the JVM (Java Virtual Machine) can execute.
- The bytecode is saved in a .class file.
- Now, type "java filename.java" to run the file



Run .java

- 
File Edit Selection View ···
week01
EXPLORER
WEEK01
HelloWorld.class
HelloWorld.java
HelloWorld.java
HelloWorld.java > HelloWorld
1 public class HelloWorld {
Run | Debug
2 public static void main(String[] args){
3 System.out.println(x:"Welcome to Java Programming!");
4 }
5 }
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS C:\Users\Lenovo\Desktop\week01> javac HelloWorld.java
PS C:\Users\Lenovo\Desktop\week01> java HelloWorld.java
Welcome to Java Programming!
PS C:\Users\Lenovo\Desktop\week01>
powershell
powershell

Run .java


File Edit Selection View
week01
EXPLORER
WEEK01
HelloWorld.java
Welcome
HelloWorld.java
HelloWorld.java > HelloWorld
1 public class HelloWorld {
Run | Debug
2 public static void main(String[] args){
3 System.out.println(x:"Welcome to Java Programming!");
4 }
5 }
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
Run: HelloWorld
PS C:\Users\Lenovo\Desktop\week01> & 'C:\Program Files\Eclipse Adoptium\jdk-17.0.13.11-hotspot\bin\java.exe' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\Lenovo\AppData\Roaming\Code\User\workspaceStorage\66b5db44a151f561fff1877a78830c6d\redhat.java\jdt_ws\week01_f6e31805\bin' 'HelloWorld'
Welcome to Java Programming!
PS C:\Users\Lenovo\Desktop\week01>

Declaring a Class & Class Body

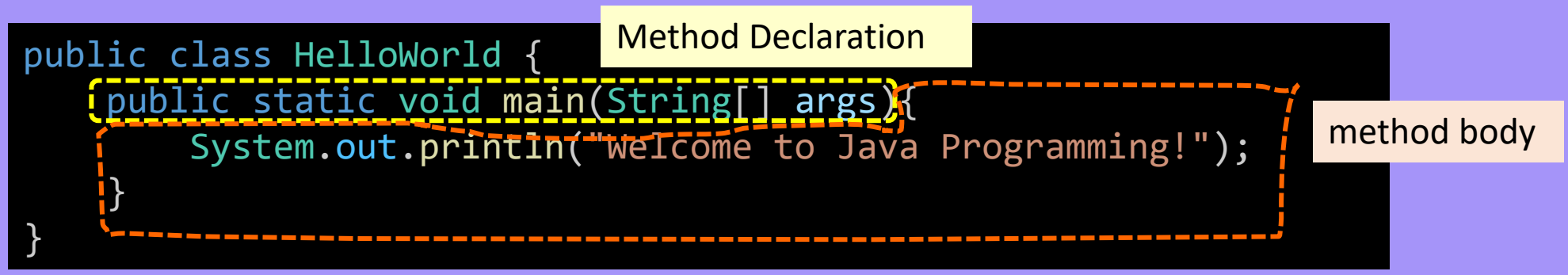
Class Declaration

```
public class HelloWorld {
    public static void main(String[] args){
        System.out.println("Welcome to Java Programming!");
    }
}
```

Class Body

- `public class HelloWorld` begins a class declaration for class HelloWorld.
- Every Java program consists of at least one class that you (the programmer) define.
- The `class` keyword introduces a class declaration and is immediately followed by the class name (HelloWorld).
- A public class must be placed in a file that has a filename of the form ClassName.java, so class HelloWorld is stored in the file HelloWorld.java
- Class names begin with a capital letter and capitalize the first letter of each word they include (e.g., SampleClassName).
- A class name is an identifier—a series of characters consisting of letters, digits, underscores (_) and dollar signs ($) that does not begin with a digit and does not contain spaces.
- Class Body, A left brace, {, begins the body of every class declaration. A corresponding right brace, }, must end each class declaration.

Declaring a Method



- `public static void main(String[] args)` is the starting point of every Java application.
- The parentheses after the identifier `main` indicate that it's a program building block called a method.
- Java class declarations normally contain one or more methods.
- Keyword `void` indicates that this method will not return any information.
- The `String[] args` in parentheses is a required part of the method main's declaration
- The left brace begins the body of the method declaration. A corresponding right brace must end it.

Performing Output with `System.out.println`

```
public class HelloWorld {
    public static void main(String[] args){
        System.out.println("Welcome to Java Programming!");
    }
}
```

- Method `System.out.print` displays (or prints) a line of text in the command window."
- Method `System.out.println` displays (or prints) a line of text by a new line in the command window."
- The string in the parentheses `"Welcome to Java Programming!"` is the argument to the method.
- including `System.out.println`, the argument `"Welcome to Java Programming!"` in the parentheses and the semicolon (;), is called a statement.
- A method typically contains one or more statements that perform its task.
- Most statements end with a semicolon.

Escape Sequences

Sequence	Description	Example	Output
\n	New Line	System.out.println("Hello\nWorld");	Hello World
\t	Tab	System.out.println("Name:\tJohn");	Name: John
\"	Double Quote	System.out.println("She said \"Hi\".");	She said "Hi".
\'	Single Quote	System.out.println('\'A\');	'A'
\\	Backslash	System.out.println("Path: C:\\dir");	Path: C:\dir
\r	Carriage Return	System.out.print("123\rABC");	ABC
\b	Backspace	System.out.print("Test\bA");	TesA

Exercise

- Create Welcome.java
- Write a Java program for Printing a line of text with multiple statements.
- Display the output of the program as follows:

```
Welcome to
ENG23 2032 - OBJECT  ORIENTED TECHNOLOGY
```

- Compile&Run
  - javac -d . week01/lecture/Welcome.java
  - java week01.lecture.Welcome