

# Java Programming II

## Lab0

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514770-1

Fall 2023

9/5/2023

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Computer Engineering  
Dankook University

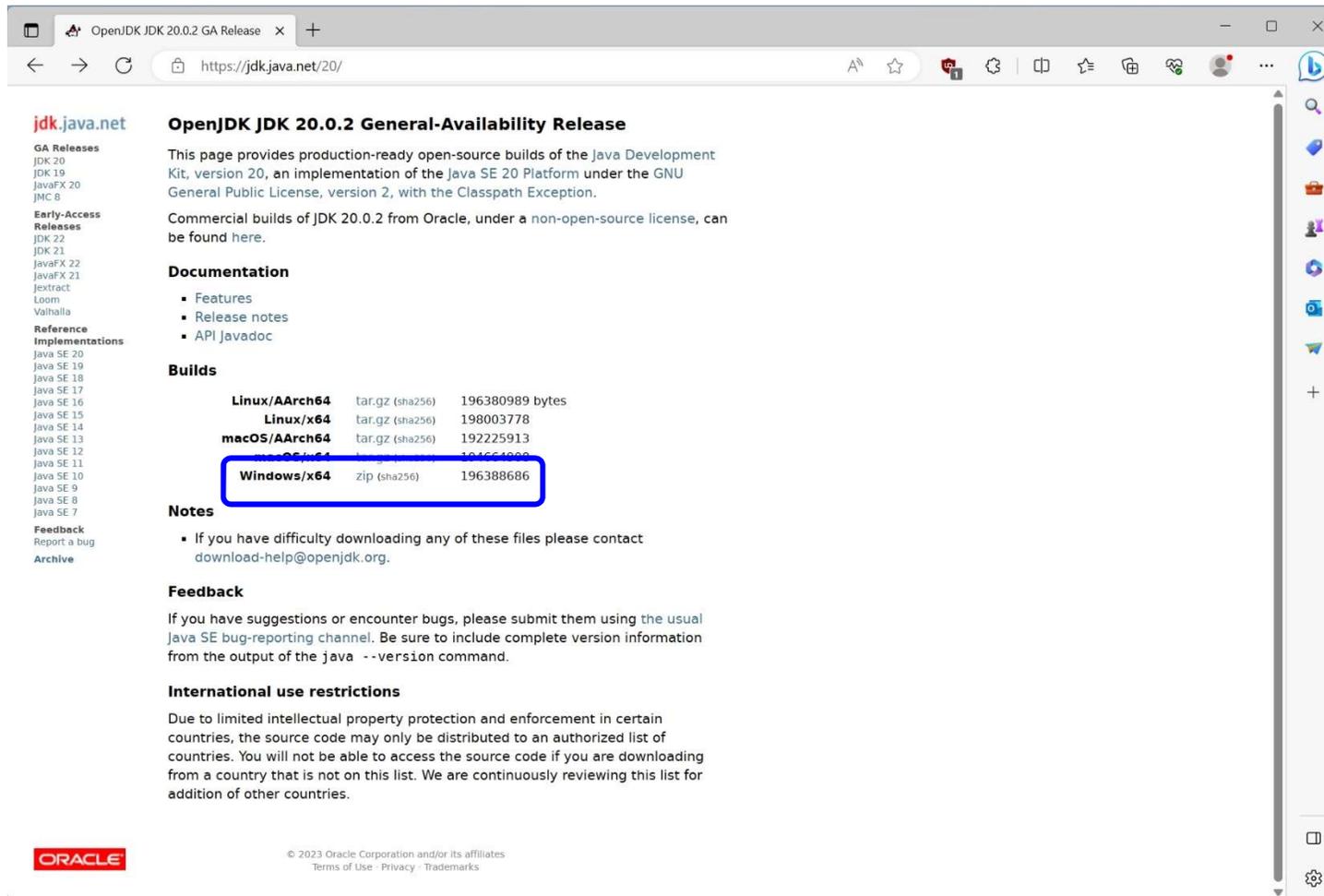
# Lab0

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1. Install OpenJDK 20.0.2 & Set Environment Variables  
<https://jdk.java.net/20/>
2. Download Visual Studio Code & Install  
[https://code.visualstudio.com/updates/v1\\_81](https://code.visualstudio.com/updates/v1_81)
3. Install "Extension Pack for Java" In Visual Studio Code which supports Java version 1.5 or above.
4. Run Hello.java

# Lab0

□ Download OpenJDK 20.0.2 <https://jdk.java.net/20/>



The screenshot shows a web browser window displaying the OpenJDK 20.0.2 General-Availability Release page. The page title is "OpenJDK JDK 20.0.2 General-Availability Release". The main content area contains the following sections:

- GA Releases**: JDK 20, JDK 19, JavaFX 20, JMC 8
- Early-Access Releases**: JDK 22, JDK 21, JavaFX 22, JavaFX 21, jextract, Loom, Valhalla
- Reference Implementations**: Java SE 20, Java SE 19, Java SE 18, Java SE 17, Java SE 16, Java SE 15, Java SE 14, Java SE 13, Java SE 12, Java SE 11, Java SE 10, Java SE 9, Java SE 8, Java SE 7
- Feedback**: Report a bug
- Archive**

The main content area also includes:

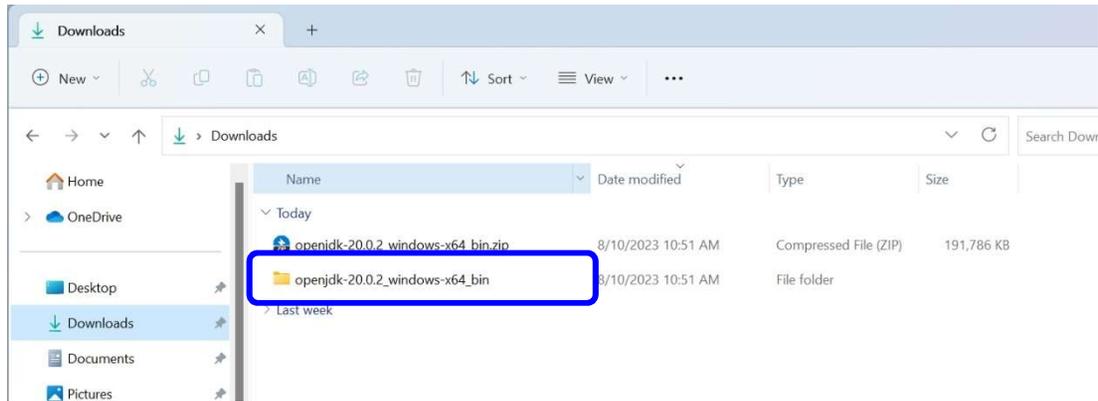
- OpenJDK JDK 20.0.2 General-Availability Release**: This page provides production-ready open-source builds of the Java Development Kit, version 20, an implementation of the Java SE 20 Platform under the GNU General Public License, version 2, with the Classpath Exception.
- Commercial builds of JDK 20.0.2 from Oracle, under a non-open-source license, can be found here.**
- Documentation**:
  - Features
  - Release notes
  - API Javadoc
- Buils**:

<b>Linux/AArch64</b>	tar.gz (sha256)	196380989 bytes
<b>Linux/x64</b>	tar.gz (sha256)	198003778
<b>macOS/AArch64</b>	tar.gz (sha256)	192225913
<b>macOS/x64</b>	tar.gz (sha256)	194554889
<b>Windows/x64</b>	zip (sha256)	196388686
- Notes**:
  - If you have difficulty downloading any of these files please contact [download-help@openjdk.org](mailto:download-help@openjdk.org).
- Feedback**: If you have suggestions or encounter bugs, please submit them using the usual [Java SE bug-reporting channel](#). Be sure to include complete version information from the output of the `java --version` command.
- International use restrictions**: Due to limited intellectual property protection and enforcement in certain countries, the source code may only be distributed to an authorized list of countries. You will not be able to access the source code if you are downloading from a country that is not on this list. We are continuously reviewing this list for addition of other countries.

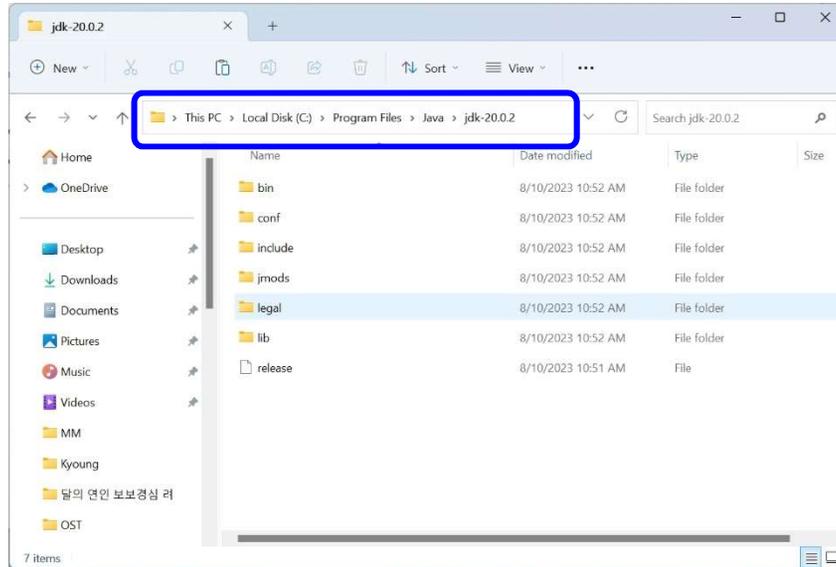
The Oracle logo is visible in the bottom left corner, and the copyright notice "© 2023 Oracle Corporation and/or its affiliates. Terms of Use - Privacy - Trademarks" is at the bottom center.

# Lab0

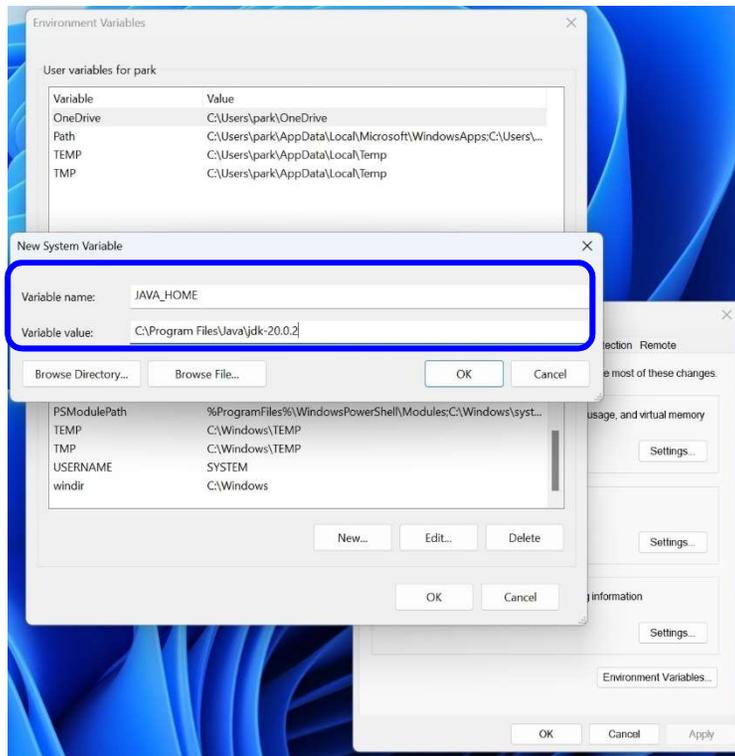
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# Lab0

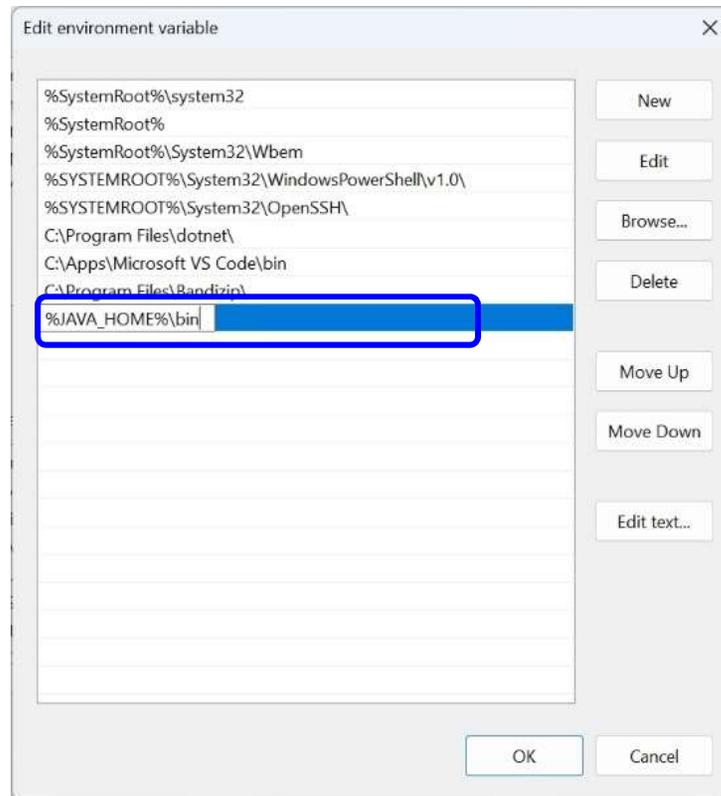


# Lab0



# Lab0

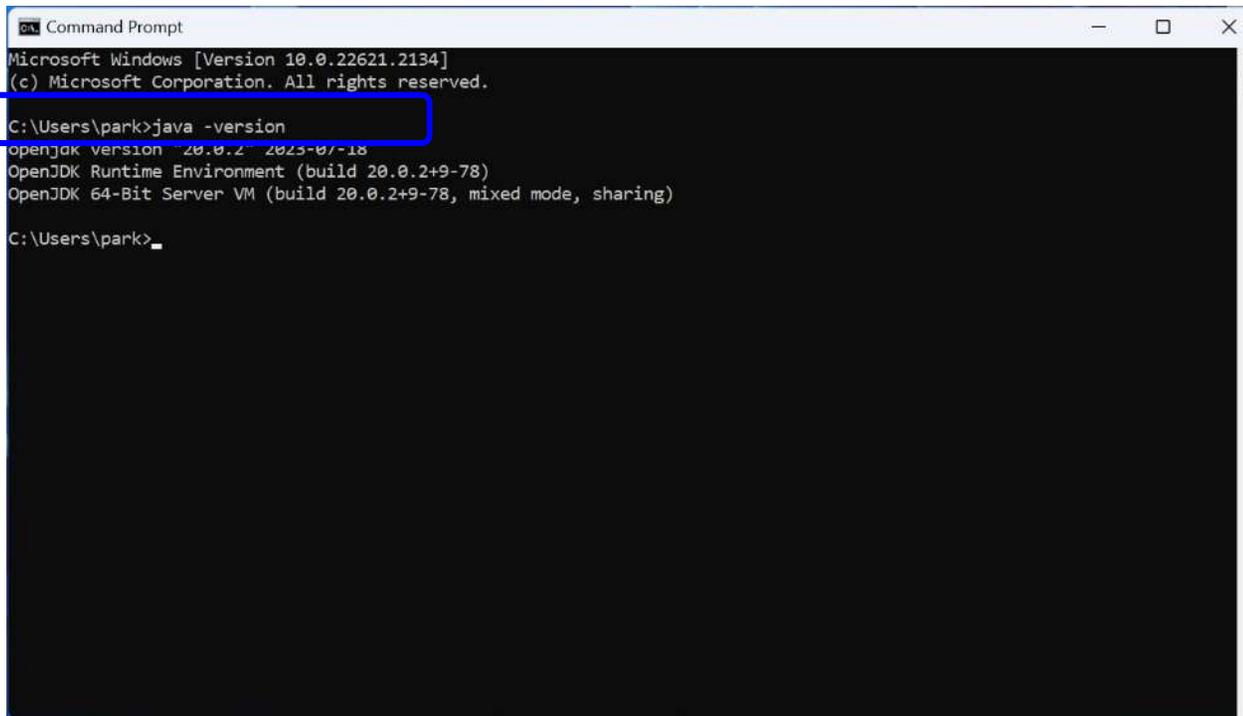
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# Lab0

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## □ Run java -version



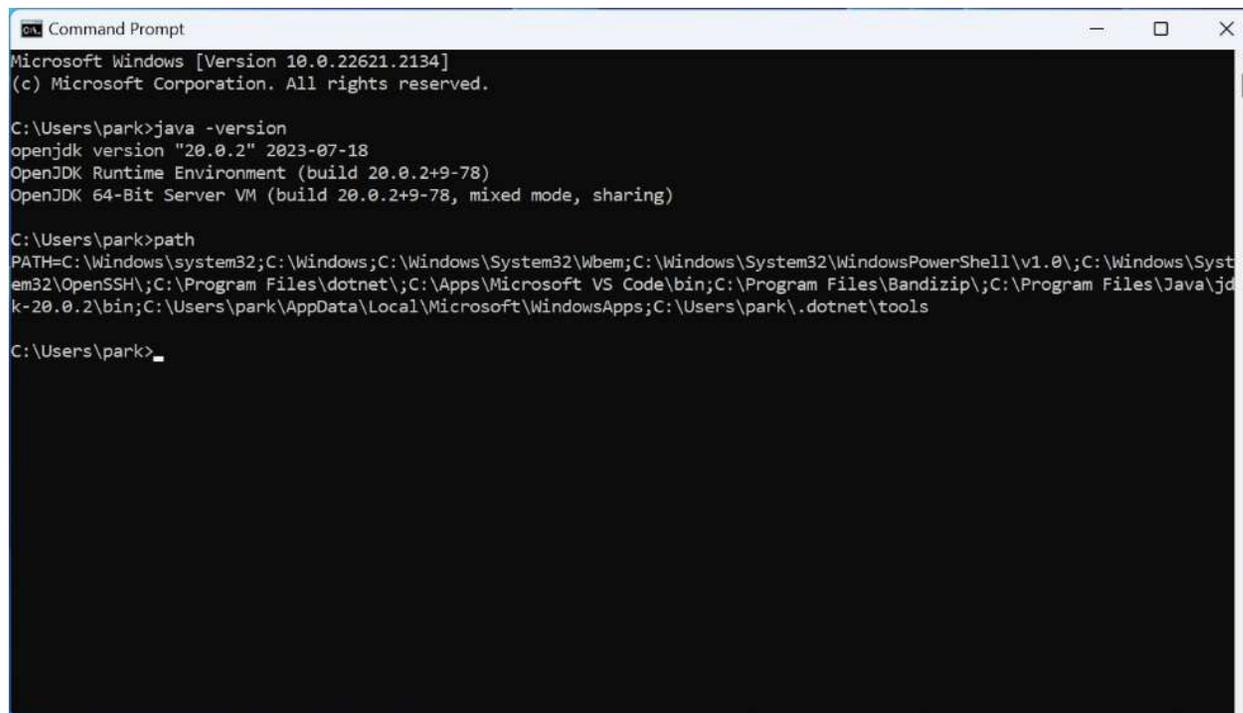
```
Command Prompt
Microsoft Windows [Version 10.0.22621.2134]
(c) Microsoft Corporation. All rights reserved.

C:\Users\park>java -version
openjdk version "20.0.2" 2023-07-18
OpenJDK Runtime Environment (build 20.0.2+9-78)
OpenJDK 64-Bit Server VM (build 20.0.2+9-78, mixed mode, sharing)

C:\Users\park>
```

# Lab0

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```
Command Prompt
Microsoft Windows [Version 10.0.22621.2134]
(c) Microsoft Corporation. All rights reserved.

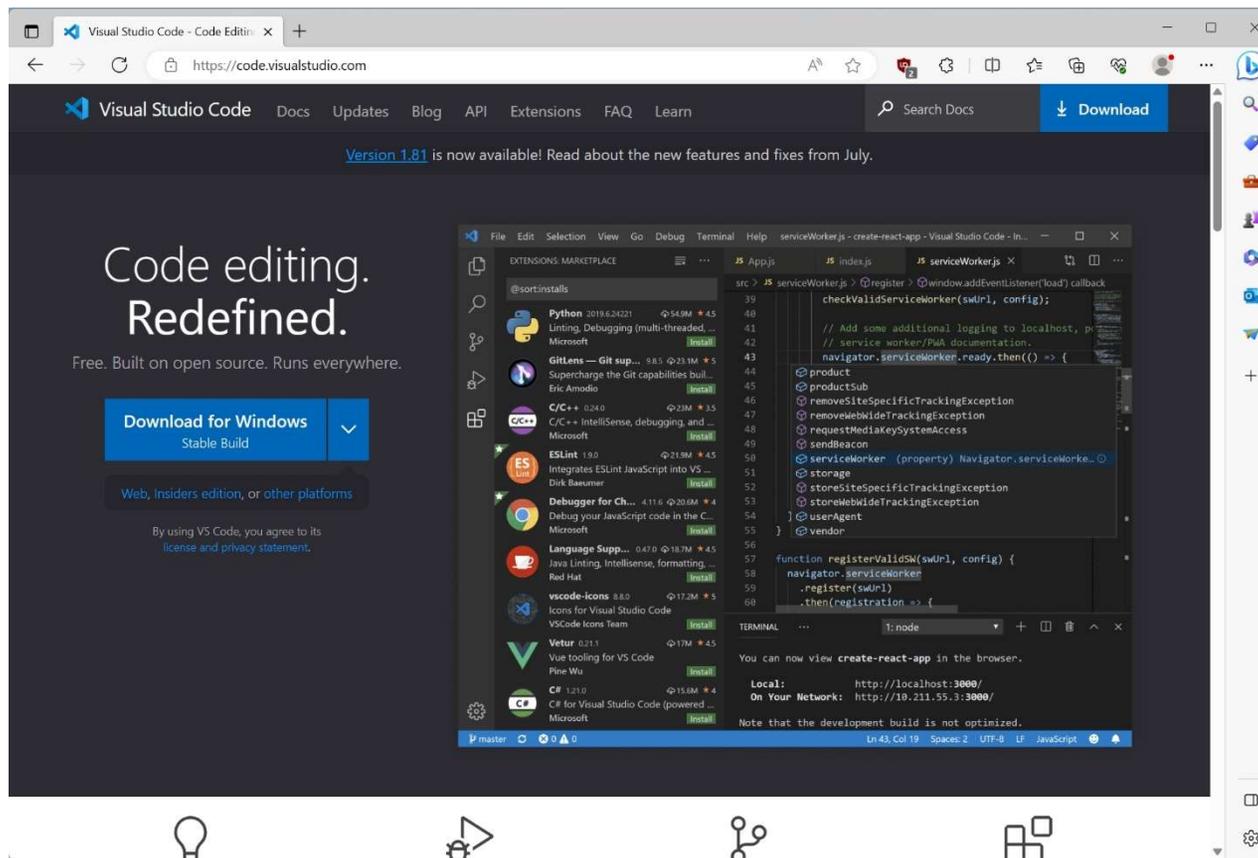
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OpenJDK Runtime Environment (build 20.0.2+9-78)
OpenJDK 64-Bit Server VM (build 20.0.2+9-78, mixed mode, sharing)

C:\Users\park>path
PATH=C:\Windows\system32;C:\Windows;C:\Windows\System32\Wbem;C:\Windows\System32\WindowsPowerShell\v1.0\;C:\Windows\System32\OpenSSH\;C:\Program Files\dotnet\;C:\Apps\Microsoft VS Code\bin;C:\Program Files\Bandizip\;C:\Program Files\Java\jdk-20.0.2\bin;C:\Users\park\AppData\Local\Microsoft\WindowsApps;C:\Users\park\.dotnet\tools

C:\Users\park>
```

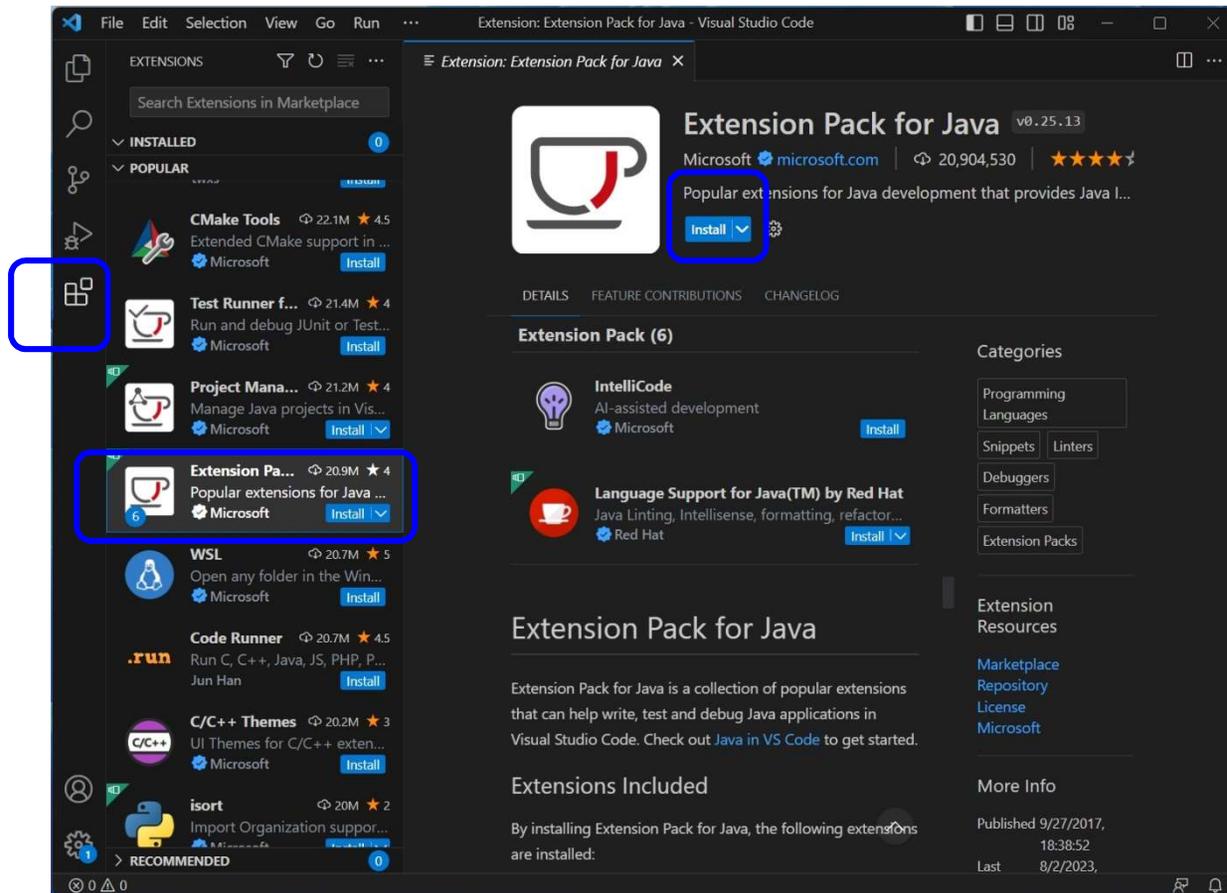
# Lab0

## Download Visual Studio Code & Install

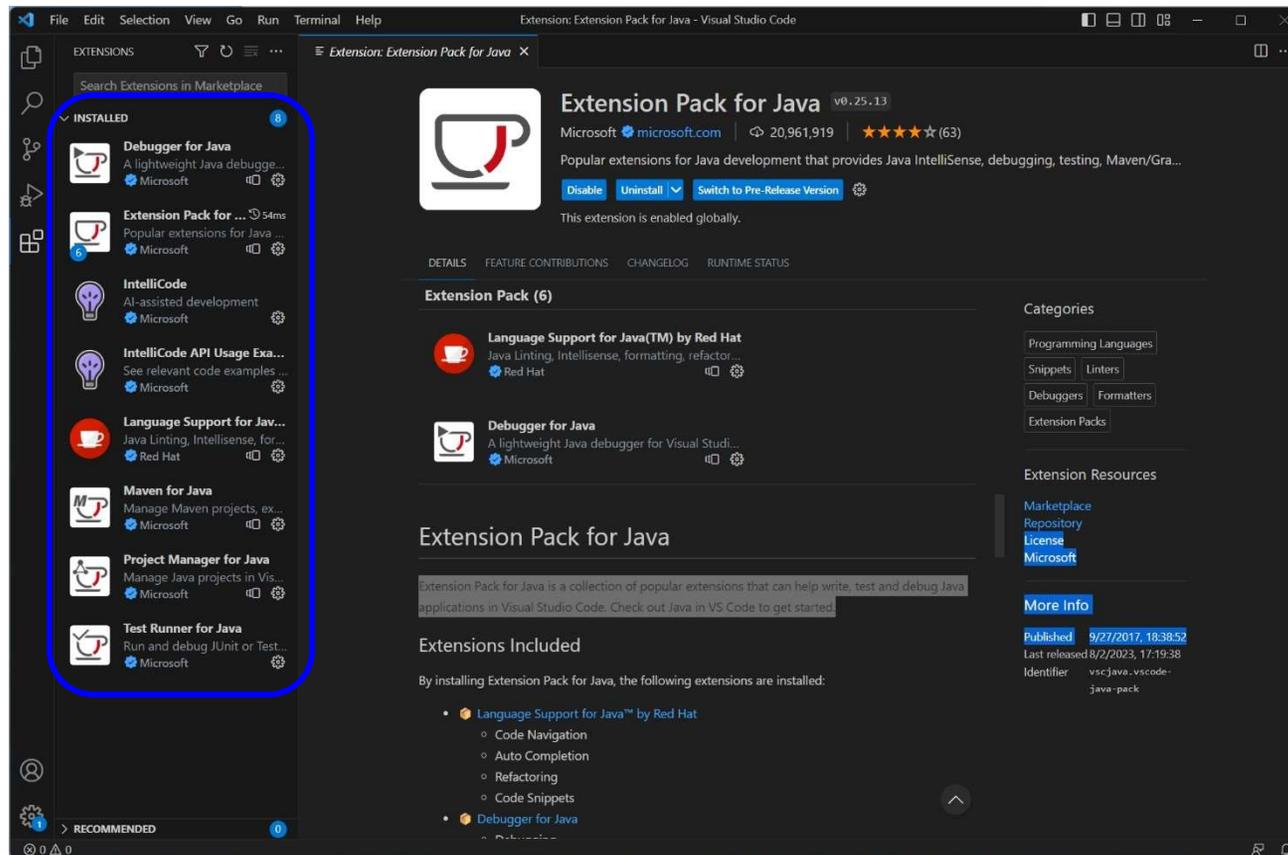


# Lab0

## Install "Extension Pack for Java"

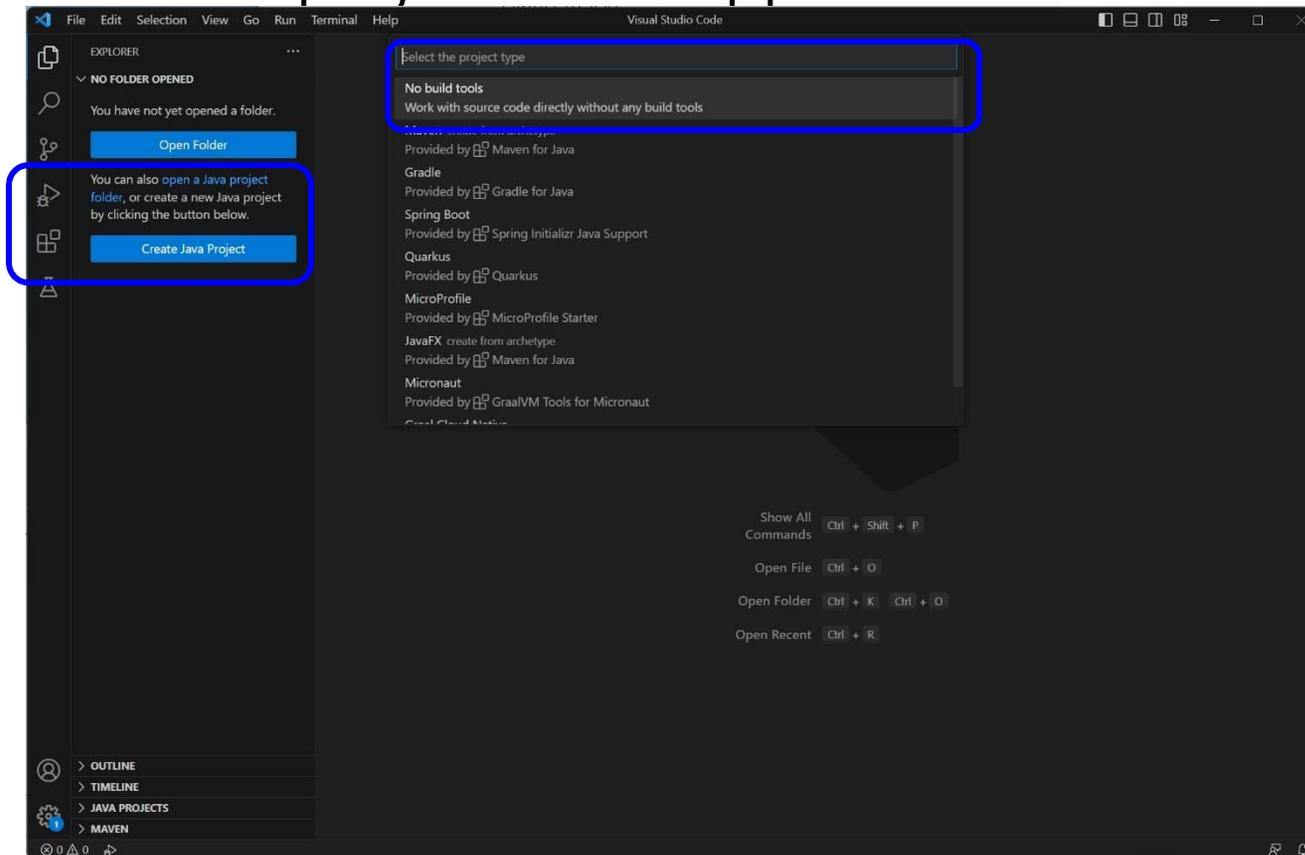


# Lab0



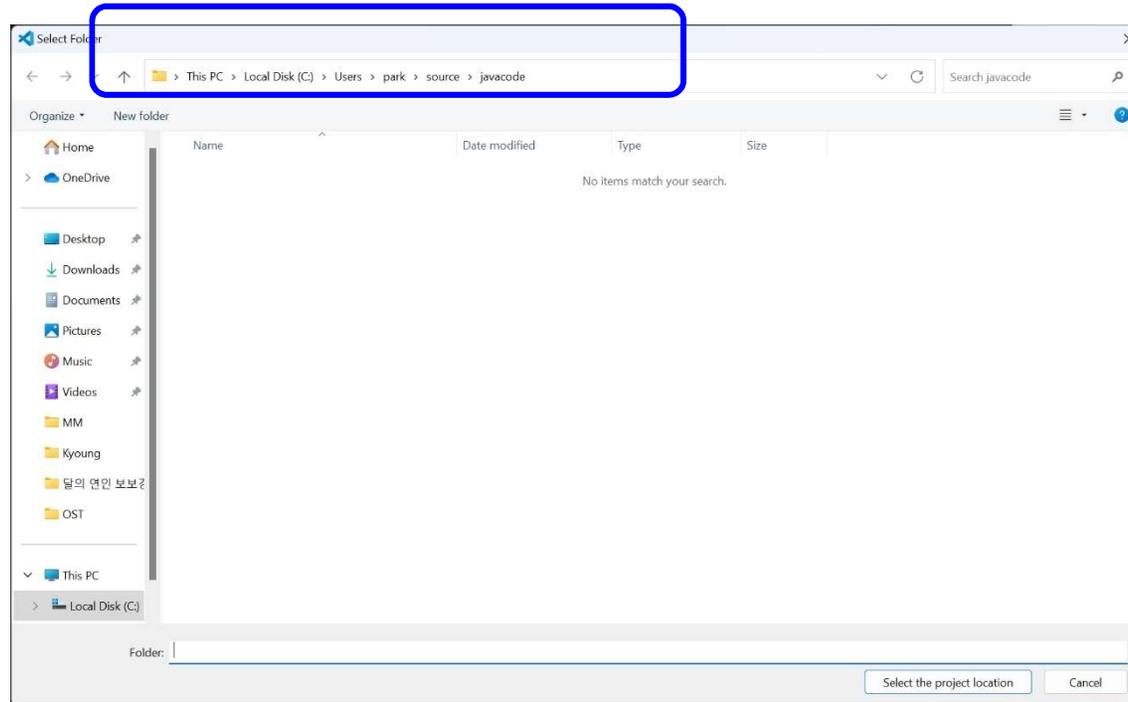
# Lab0

## □ Create a Java project: HelloApp

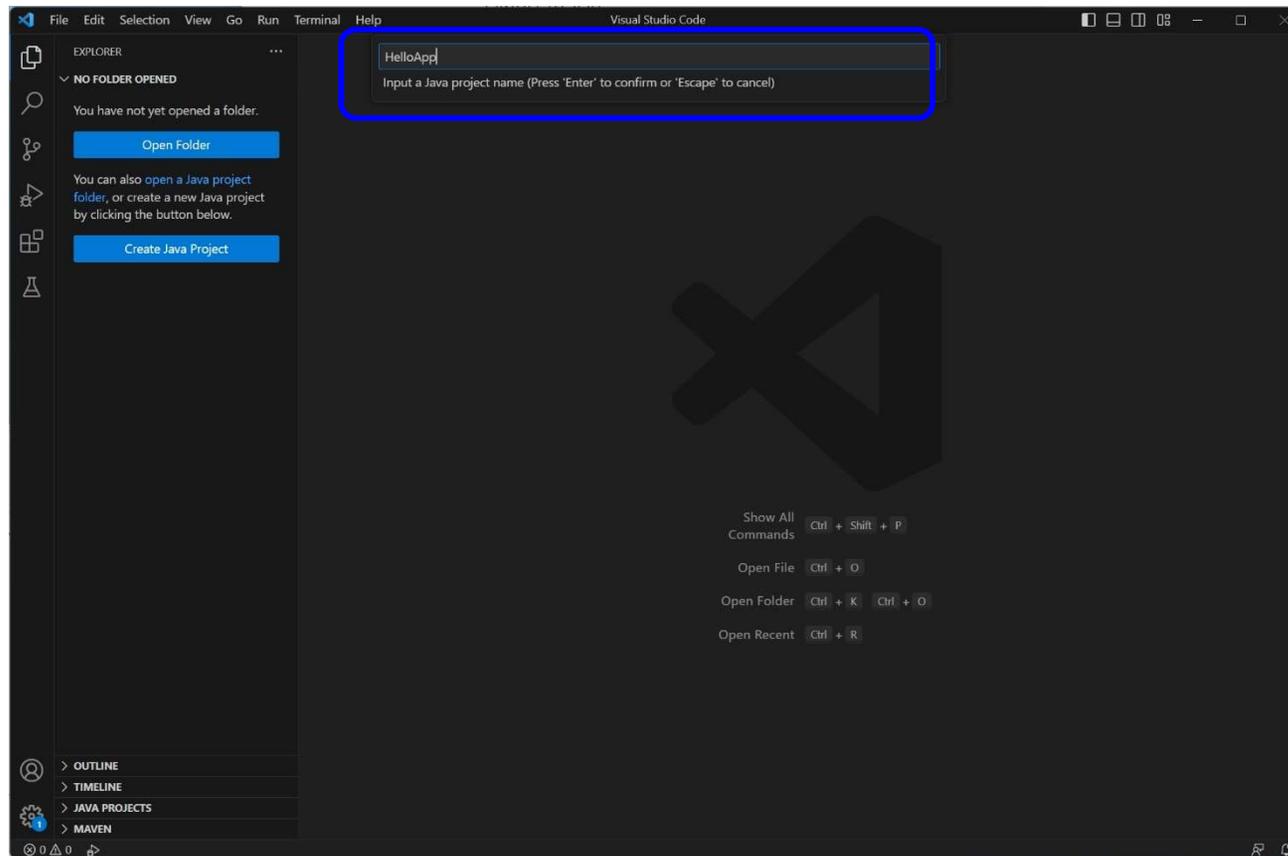


# Lab0

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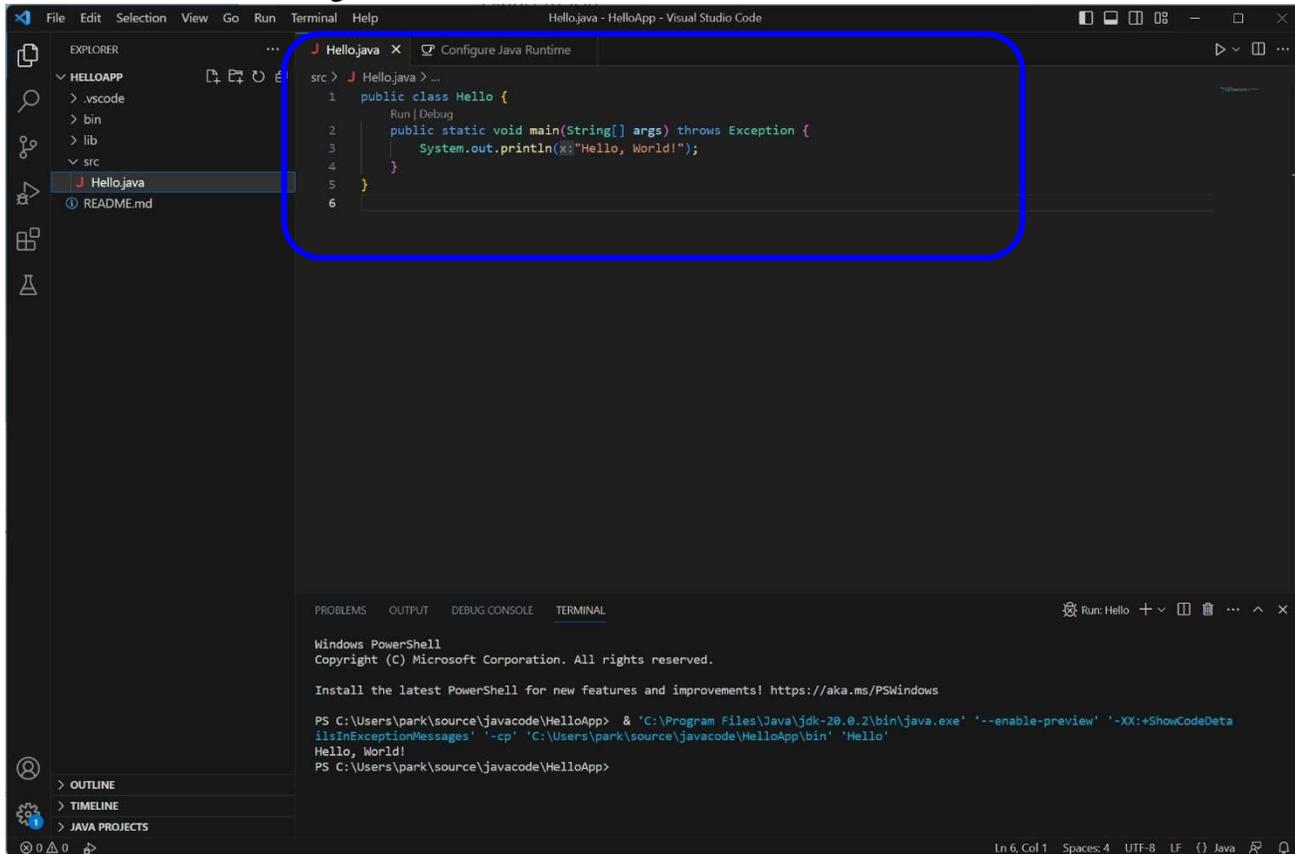


# Lab0



# Lab0

## □ Create Hello.java



The screenshot shows the Visual Studio Code interface with a project named 'HELLOAPP'. The Explorer sidebar on the left shows the file structure with 'Hello.java' selected. The main editor window displays the following Java code:

```
src > J Hello.java > ...
1 public class Hello {
2     Run | Debug
3     public static void main(String[] args) throws Exception {
4         System.out.println("Hello, World!");
5     }
6 }
```

The terminal at the bottom shows the execution of the program:

```
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

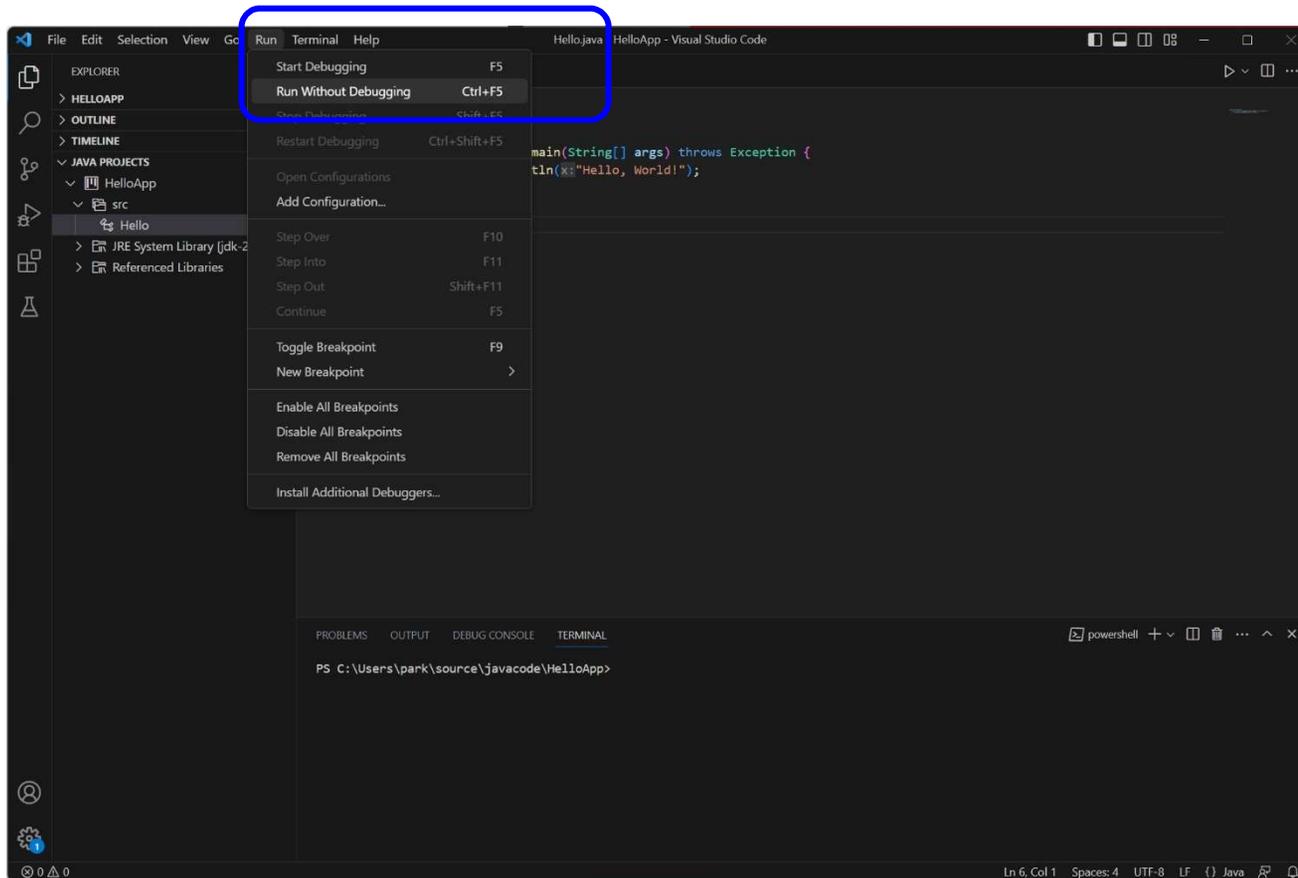
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\park\source\javacode\HelloApp> & 'C:\Program Files\Java\jdk-20.0.2\bin\java.exe' '--enable-preview' '-XX:+ShowCodeData
ilsInExceptionMessages' '-cp' 'C:\Users\park\source\javacode\HelloApp\bin' 'Hello'
Hello, World!
PS C:\Users\park\source\javacode\HelloApp>
```

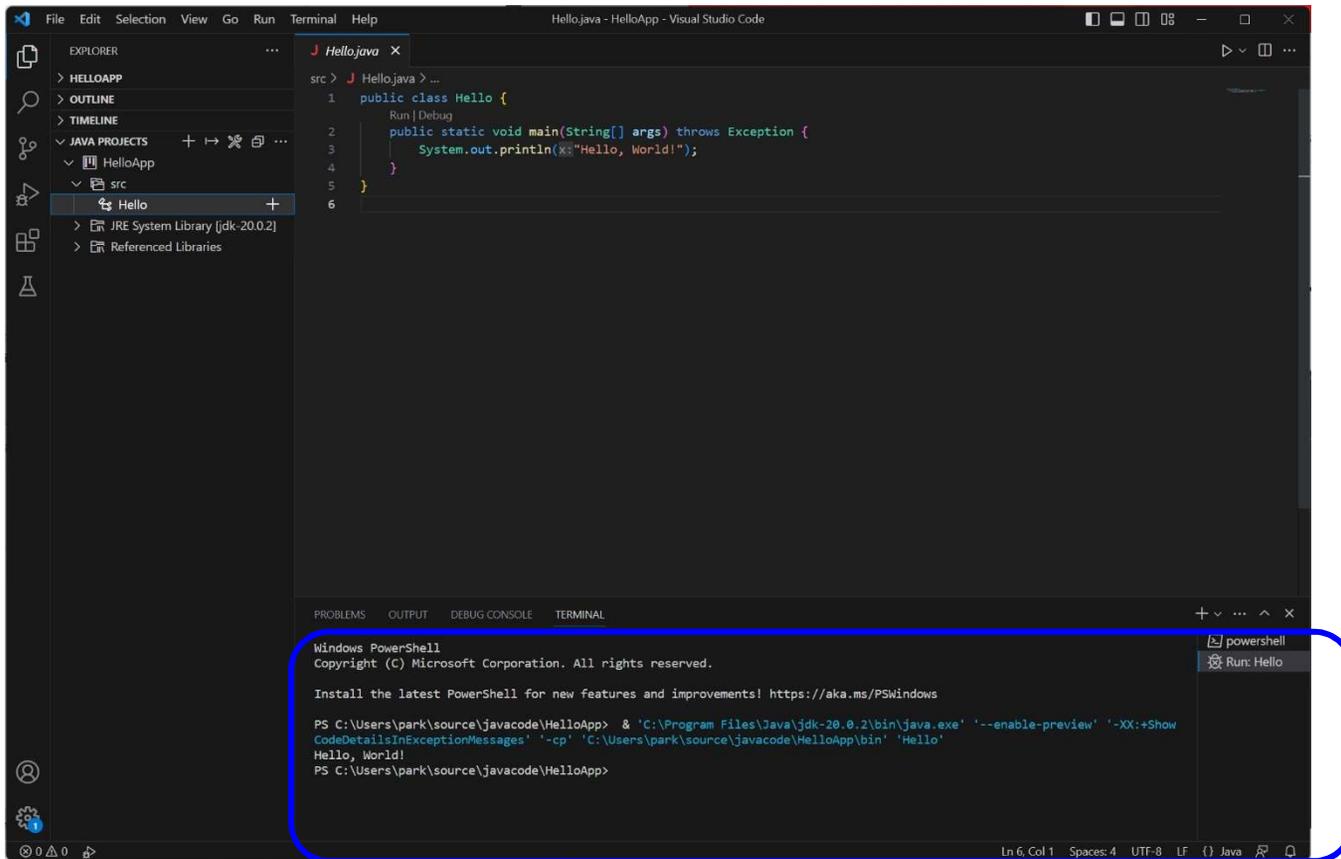
The status bar at the bottom indicates the current cursor position: 'Ln 6, Col 1 | Spaces: 4 | UTF-8 | LF | Java'.

# Lab0

## □ Run Without Debugging



# Lab0



The image shows a screenshot of the Visual Studio Code editor. The main editor window displays a Java file named `Hello.java` with the following code:

```
src > J Hello.java > ...  
1 public class Hello {  
2     Run | Debug  
3     public static void main(String[] args) throws Exception {  
4         System.out.println("Hello, World!");  
5     }  
6 }
```

The Explorer sidebar on the left shows the project structure:

- HELLOAPP
- OUTLINE
- TIMELINE
- JAVA PROJECTS
  - HelloApp
    - src
      - Hello
- JRE System Library [jdk-20.0.2]
- Referenced Libraries

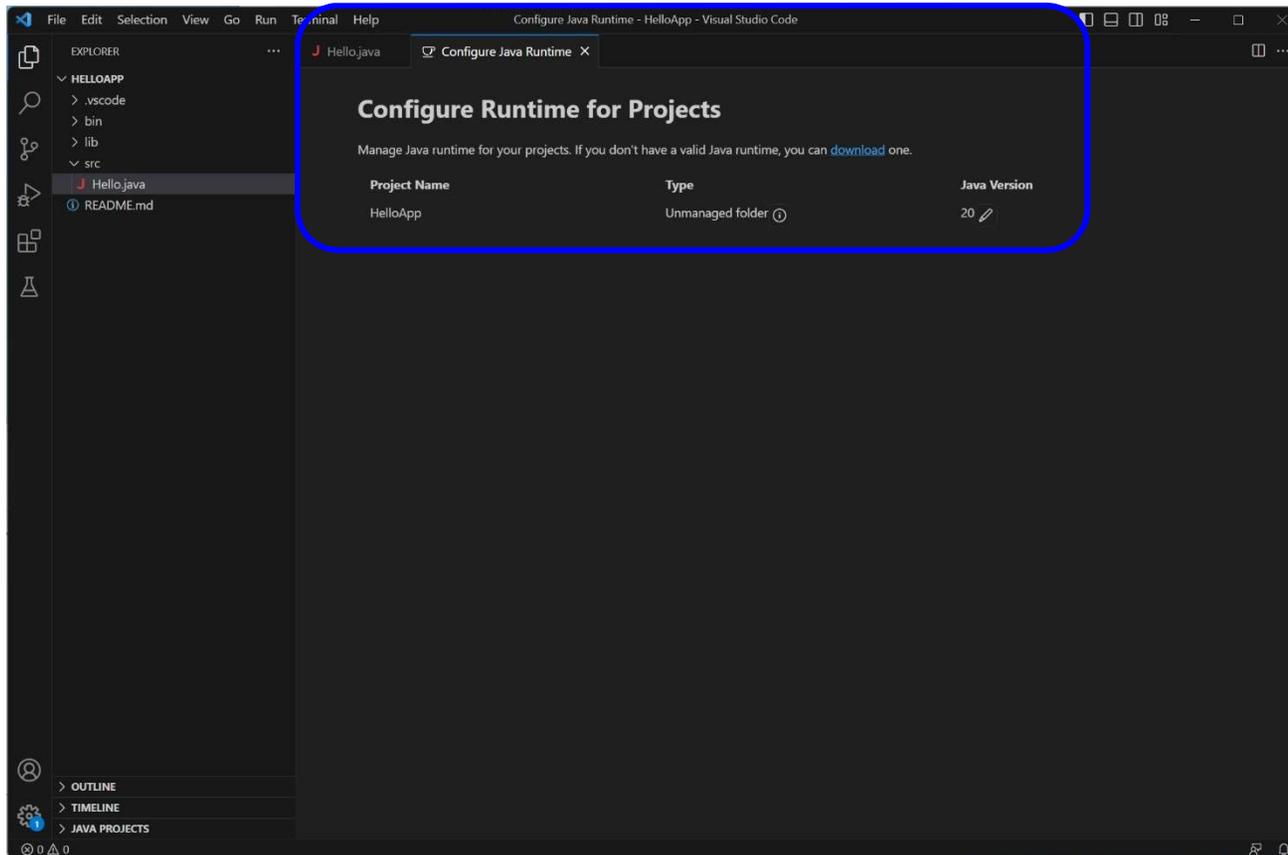
The Terminal window at the bottom shows the execution of the program:

```
Windows PowerShell  
Copyright (c) Microsoft Corporation. All rights reserved.  
  
Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows  
  
PS C:\Users\park\source\javacode\HelloApp> & 'C:\Program Files\Java\jdk-20.0.2\bin\java.exe' '--enable-preview' '-XX:+ShowCodeDetailsInExceptionMessages' '-cp' 'C:\Users\park\source\javacode\HelloApp\bin' 'Hello'  
Hello, World!  
PS C:\Users\park\source\javacode\HelloApp>
```

The terminal output shows the command being executed and the resulting output "Hello, World!". The terminal window also includes a "powershell" tab and a "Run: Hello" button.

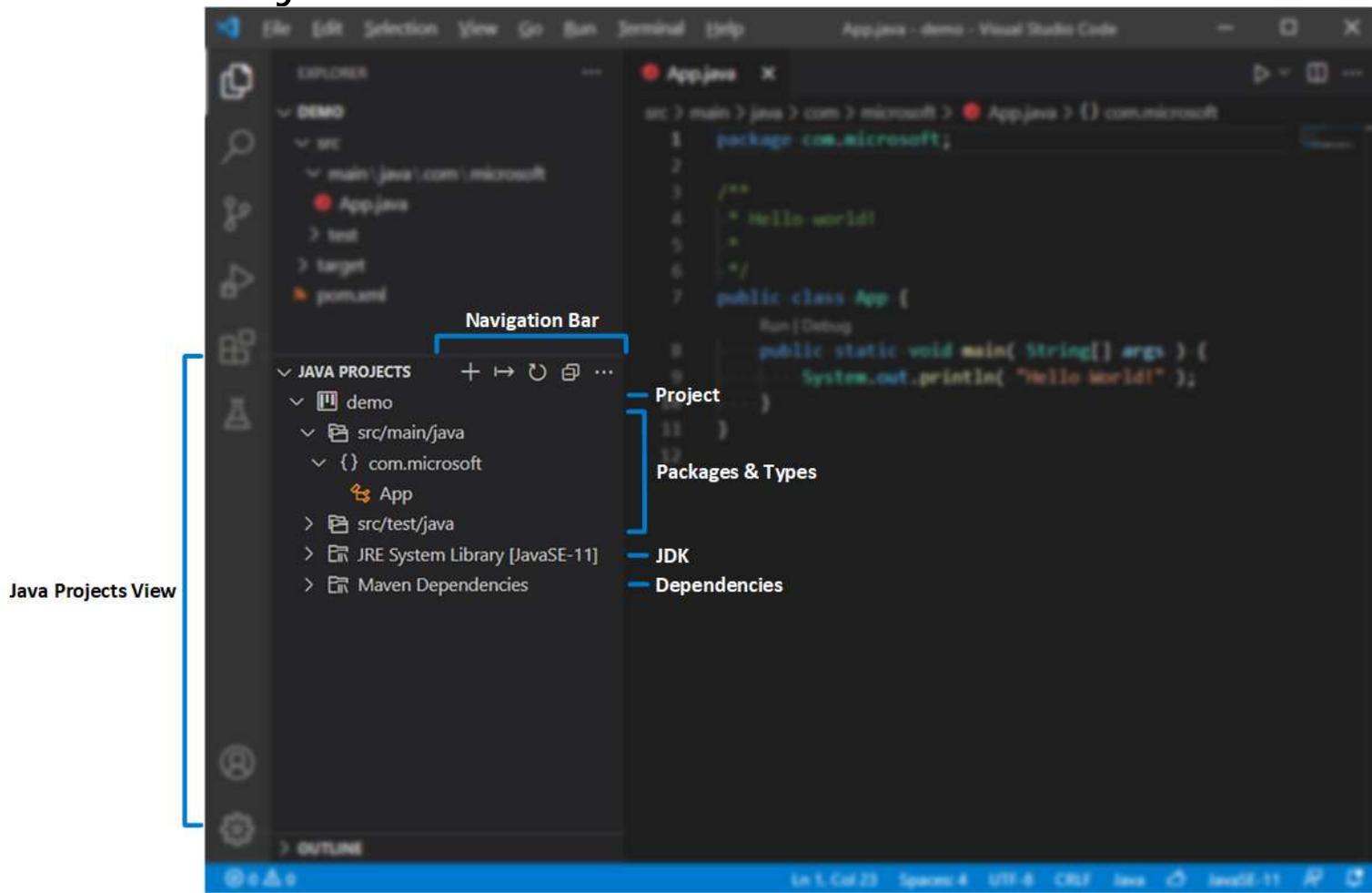
# Lab0

## □ Configure Runtime for Projects



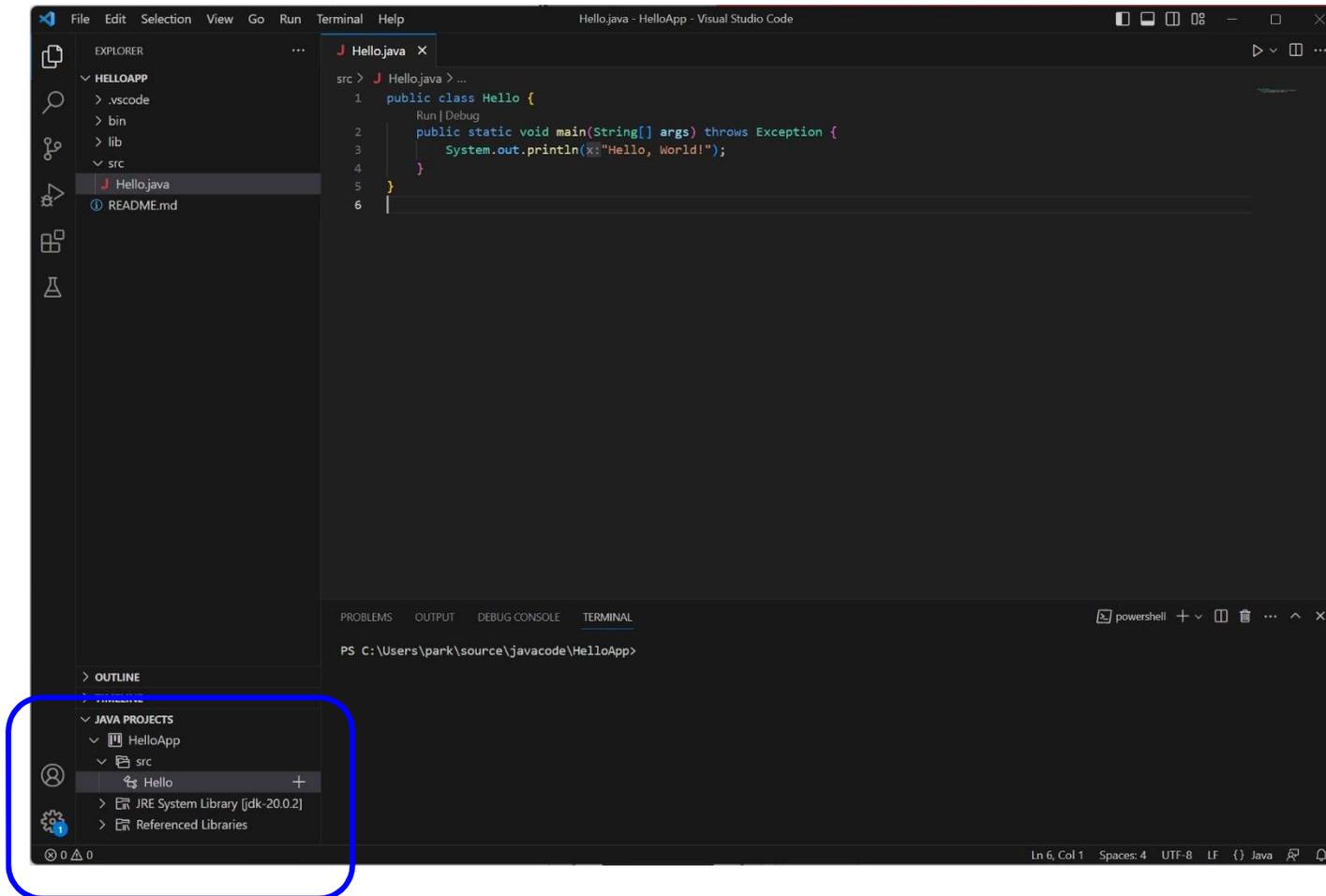
# Lab0

## Java Project View



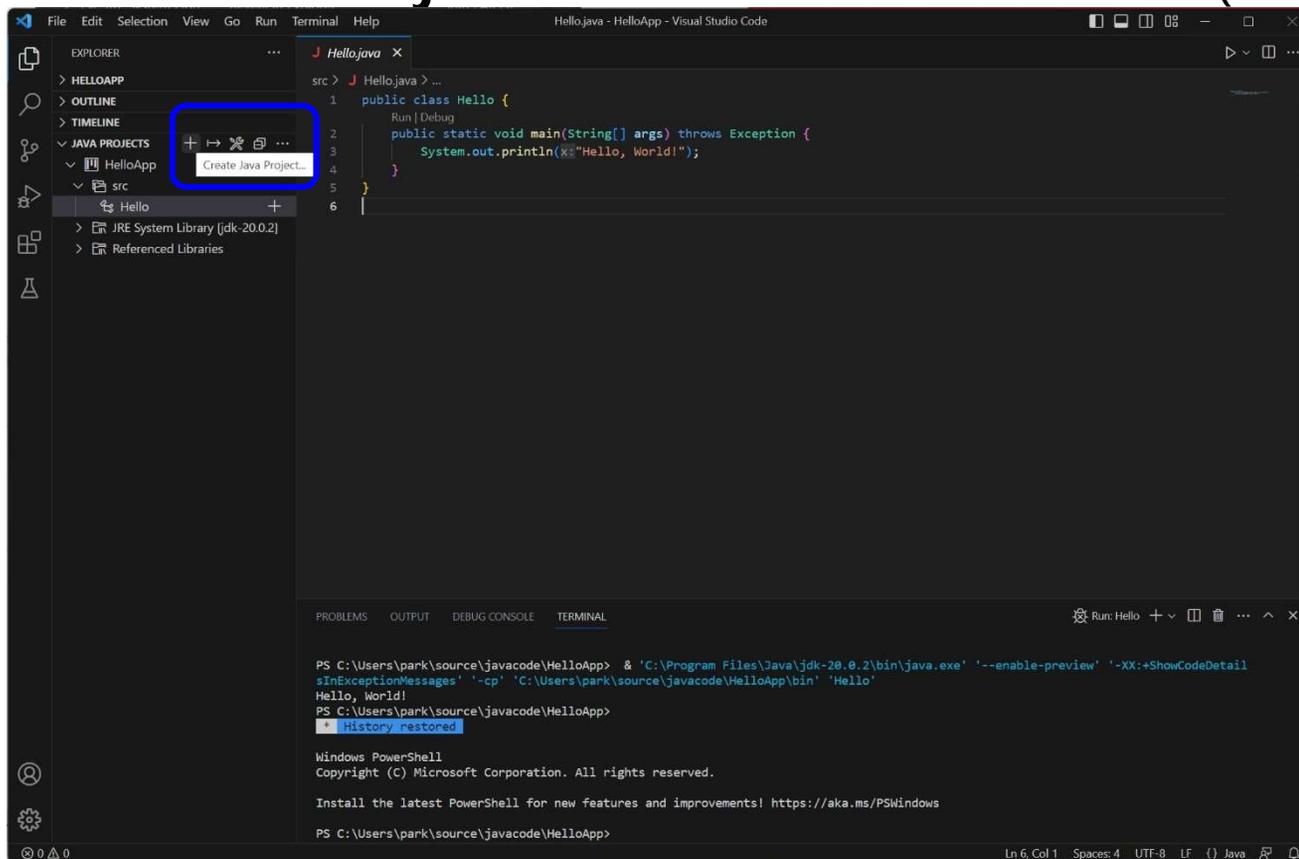
[https://code.visualstudio.com/docs/java/java-project#\\_configure-runtime-for-projects](https://code.visualstudio.com/docs/java/java-project#_configure-runtime-for-projects)

# Lab0



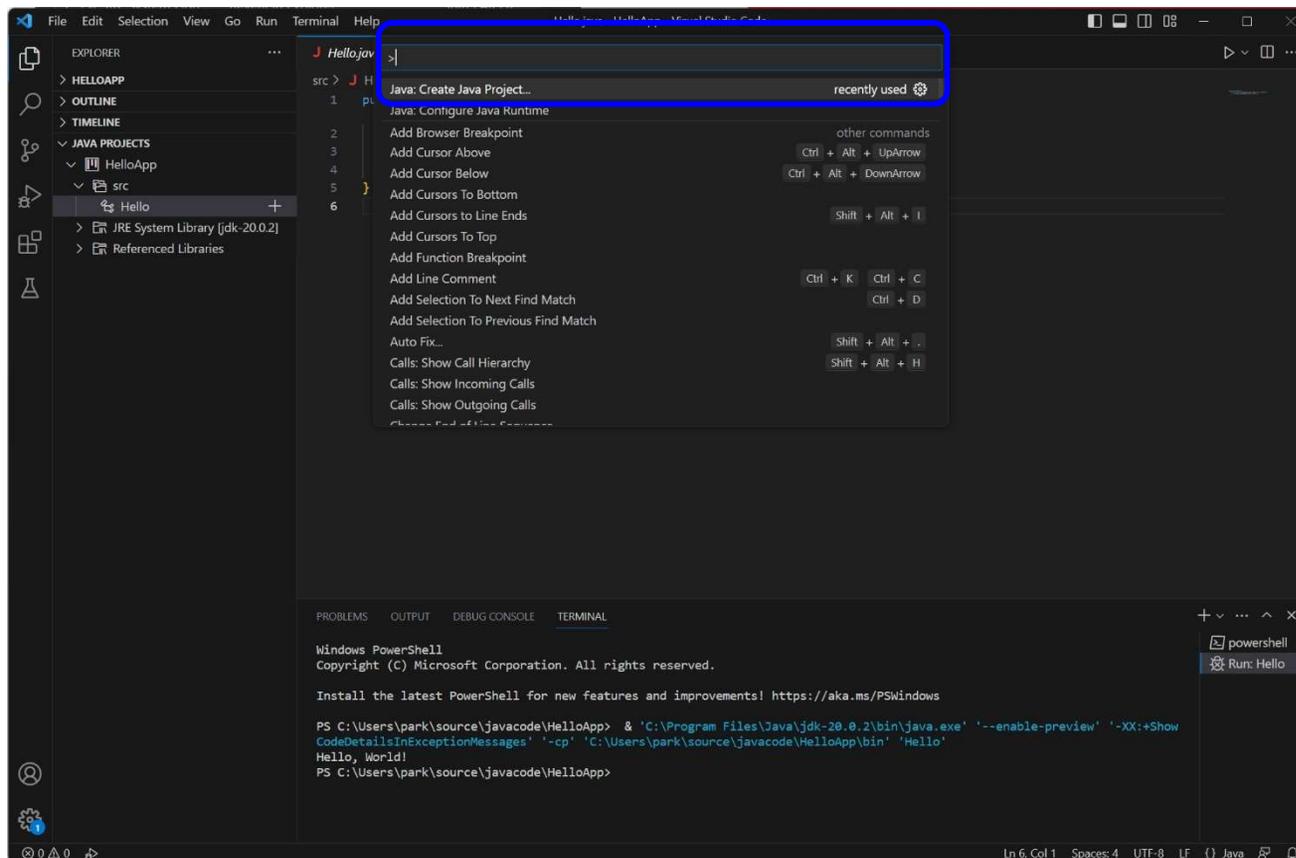
# Lab0

- ❑ Create a New Java project by clicking the **+** button in the navigation bar, or through the command: **Java: Create Java Project...** in Command Palette (Ctrl+Shift+P).



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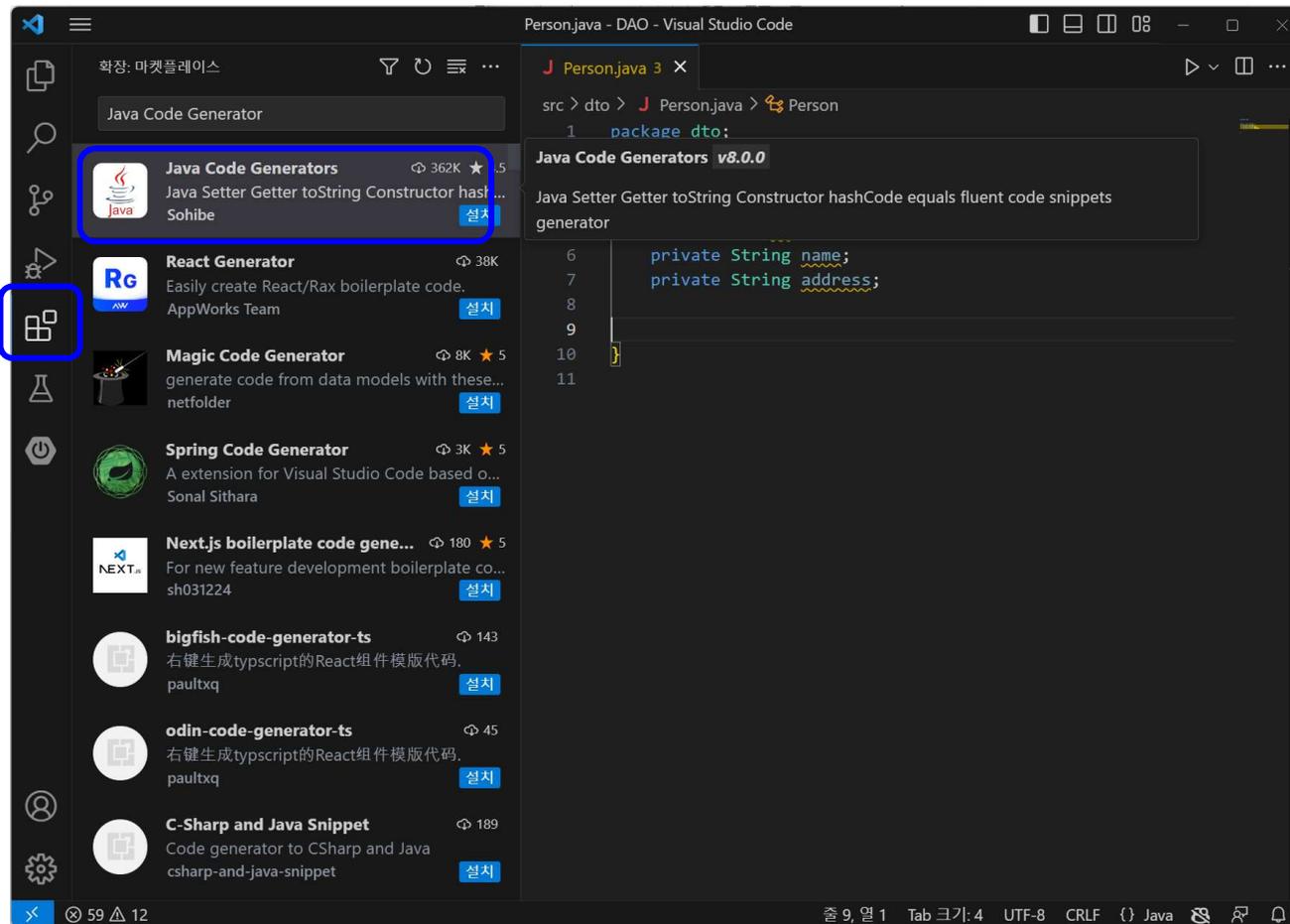
# Submit to e-learning

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- ❑ Submit the Lab0 assignment (including the 1-page report) to e-learning **(due by 9/11)**.
- ❑ [https://code.visualstudio.com/docs/java/java-project#\\_configure-runtime-for-projects](https://code.visualstudio.com/docs/java/java-project#_configure-runtime-for-projects)

# VS Code Generator

- **Ctrl + Shift + X (Extensions)**
- **Install Getter and Setter Generator**



# VS Code Getter/Setter

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- Drag the member field to create Getter/Setter

```
3
4 public class Person {
5     private int id;
6     private String name;
7     private String address;
8
9     public Person(int id, String name, String address) {
10         this.id = id;
11         this.name = name;
12         this.address = address;
13     }
14
15
16     @Override
17     public String toString() {
18         return "Person [id=" + id + ", name=" + name + ", address=" + address + "]";
19     }
20 }
21
```

# VS Code Getter/Setter

- ❑ Ctrl + Shift + P (or F1) prompt command
- ❑ Generate constructor, getter & setter, hashCode & equal, toString

