

Java Programming Environment

Lab 1

TA : Hyuna Seo, Kichang Yang, Minkyung Kim, Jaeyong Kim



SEOUL NATIONAL UNIVERSITY

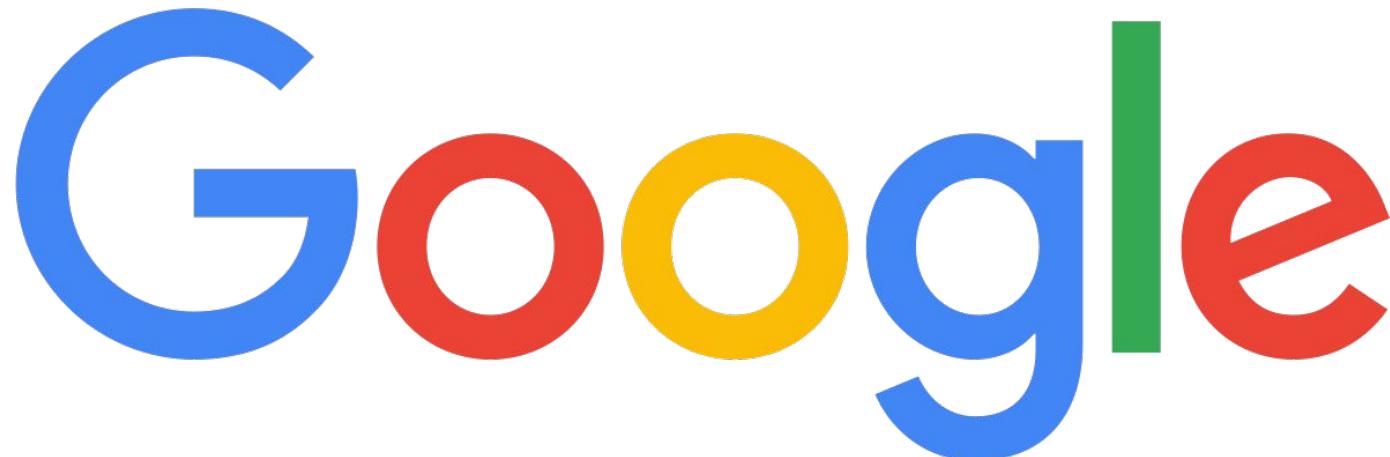
Communication

- You **MUST** join our Slack workspace.
 - Most of the announcements will be delivered through Slack.
 - Refer to Slack Guide pdf in ETL
 - It is recommended that the group members answer each other through the slack channel. Participation points will be given to those who actively answer their colleagues' questions.
- Questions that are difficult to ask through Slack can be asked through email
 - Official TA e-mail : ta_cp@hcs.snu.ac.kr

There are many services that can help you!!

Before you ask questions,
try to find your own answers through these platforms!

This process will grow you up.





Lab Evaluation

- Lab evaluation is based on...
 - 1) Attendance
Checked with Zoom enter/exit time (in the same way as lecture attendance)
 - 2) Lab exercise submission
There are some simple exercise problems in each lab.
You need to complete the exercise and submit it to **ETL before next lab session.**

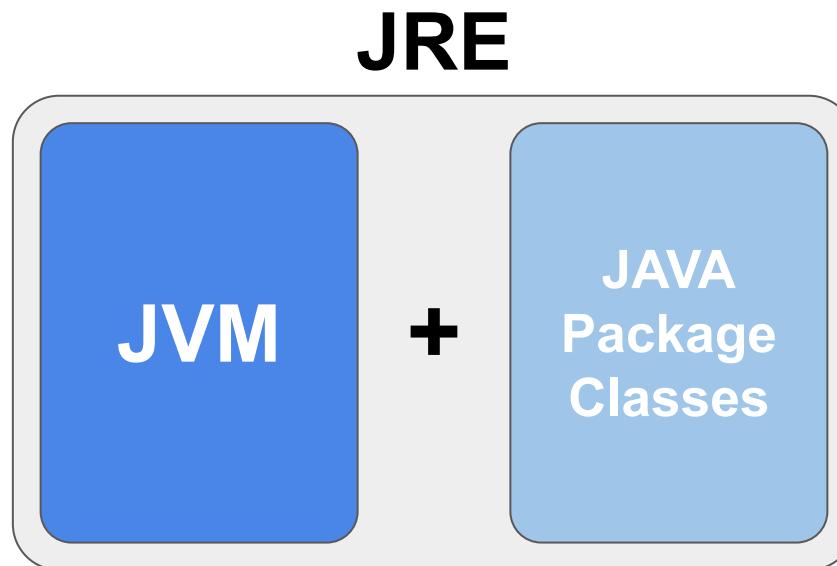


Overview

- **Run a Java program**
 - Install JDK
 - Write a Java code in text editor
 - Run a Java program
- **Run a Java program in IntelliJ IDEA**
 - Install IntelliJ IDEA
 - Write a code in IntelliJ IDEA
 - Configure run settings
 - Hello World!

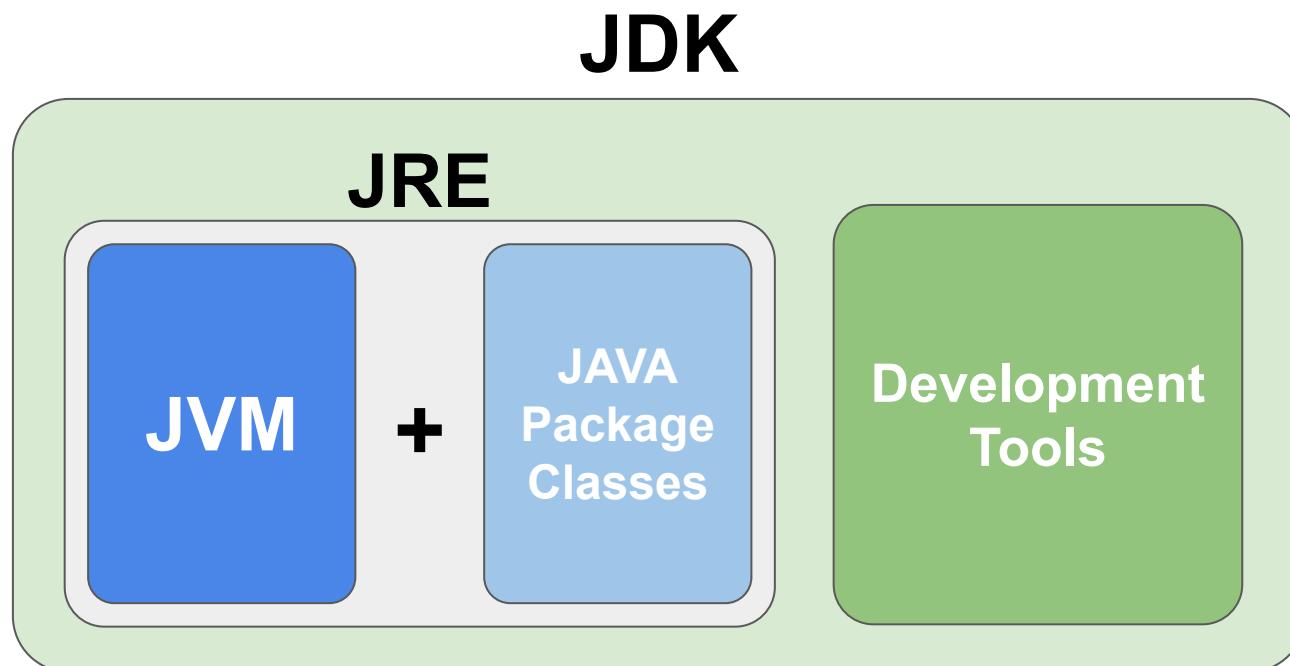
Java Development Environment

- **JVM** (Java Virtual Machine) is a virtual machine which enables a computer to run Java programs
- **JRE** (Java Runtime Environment) is needed to run Java Programs
 - **JVM** + Java package classes (util, math, lang, etc.)



Java Development Environment

- **JDK** (Java Development Kit) is needed to develop Java Programs
 - **JRE** + development tools (javac, java, etc.)
- **Java SE** (Standard Edition) is an edition of **JDK**



Download JDK installer

- <https://www.oracle.com/kr/java/technologies/java-e-jdk11-downloads.html>

Choose your OS

Product / File Description	File Size	Download
Linux ARM 64 Debian Package	145.98 MB	jdk-11.0.12_linux-aarch64_bin.deb
Linux ARM 64 RPM Package	152.55 MB	jdk-11.0.12_linux-aarch64_bin.rpm
Linux ARM 64 Compressed Archive	169.92 MB	jdk-11.0.12_linux-aarch64_bin.tar.gz
Linux x64Debian Package	149.74 MB	jdk-11.0.12_linux-x64_bin.deb
Linux x64 RPM Package	156.45 MB	jdk-11.0.12_linux-x64_bin.rpm
Linux x64 Compressed Archive	173.86 MB	jdk-11.0.12_linux-x64_bin.tar.gz
macOS Installer	167.04 MB	jdk-11.0.12_osx-x64_bin.dmg
macOS Compressed Archive	168.19 MB	jdk-11.0.12_osx-x64_bin.tar.gz
Solaris SPARC Compressed Archive	184.5 MB	jdk-11.0.12_solaris-sparcv9_bin.tar.gz
Windows x64 Installer	151.41 MB	jdk-11.0.12_windows-x64_bin.exe
Windows x64 Compressed Archive	171.27 MB	jdk-11.0.12_windows-x64_bin.zip

Mac

Windows

Download JDK installer

- Oracle sign up

오라클 계정 로그인

사용자 이름

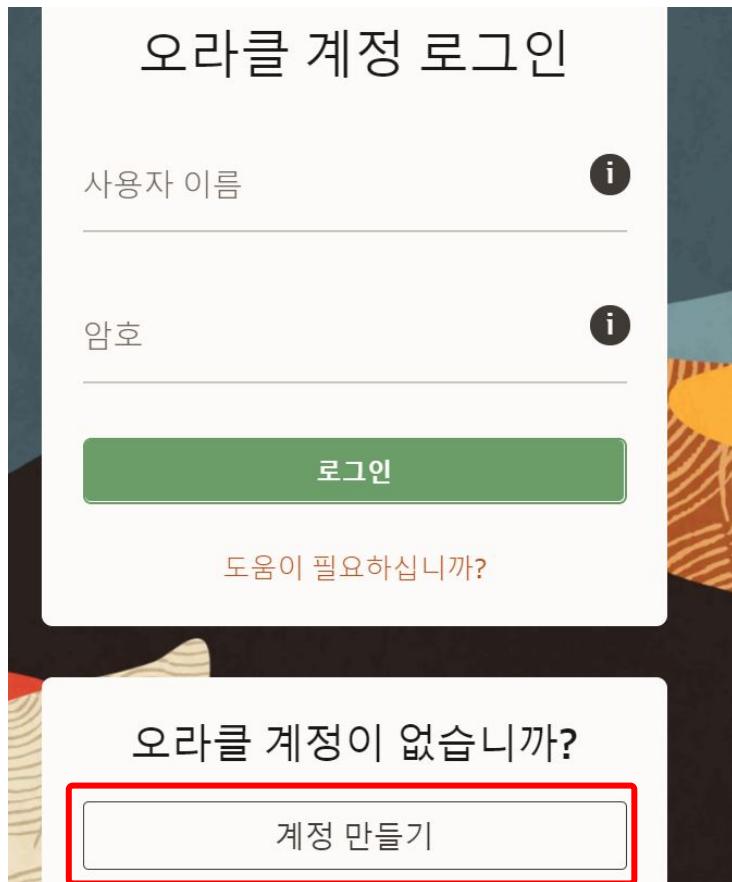
암호

로그인

도움이 필요하십니까?

오라클 계정이 없습니까?

계정 만들기



이메일 주소 *

암호 *

암호 재입력 *

국가 * 대한민국

이름 * 성(영문) 이름

이름(영문) * 성(영문) 이름(영문)

직책 *

직장 전화 *

회사명 *

주소 *

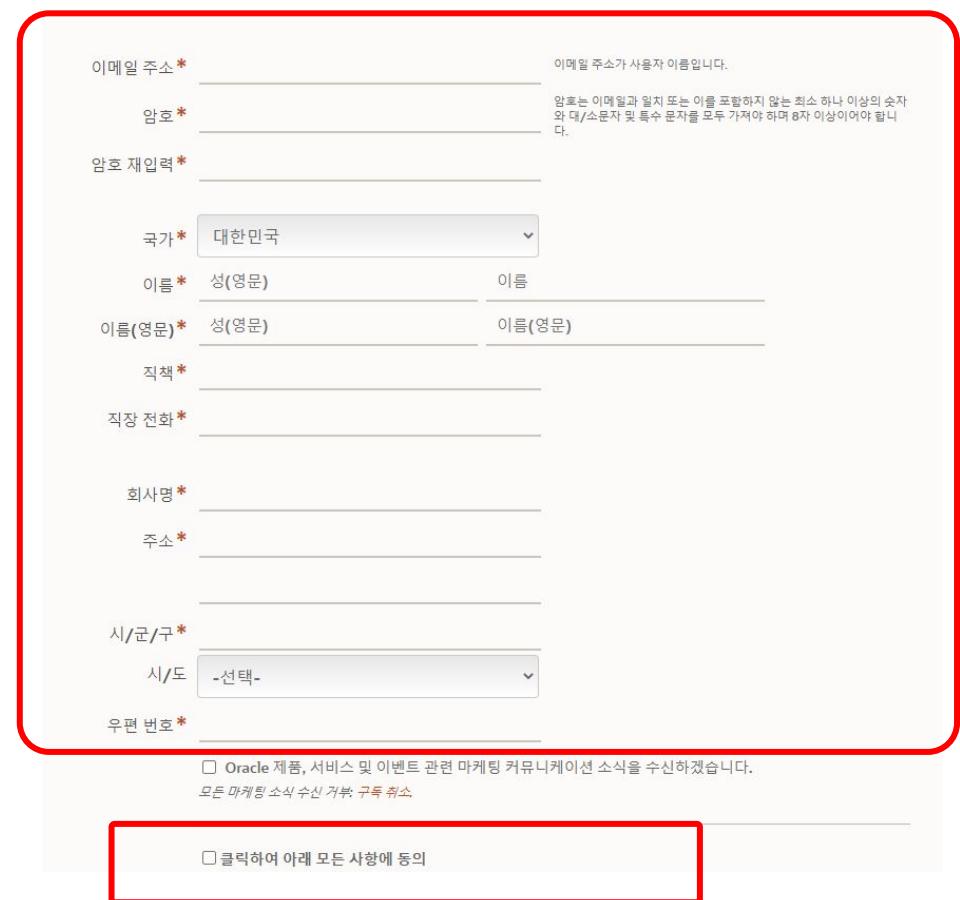
시/군/구 *

시/도 -선택-

우편 번호 *

Oracle 제품, 서비스 및 이벤트 관련 마케팅 커뮤니케이션 소식을 수신하겠습니다.
모든 마케팅 소식 수신 거부: 구독 취소

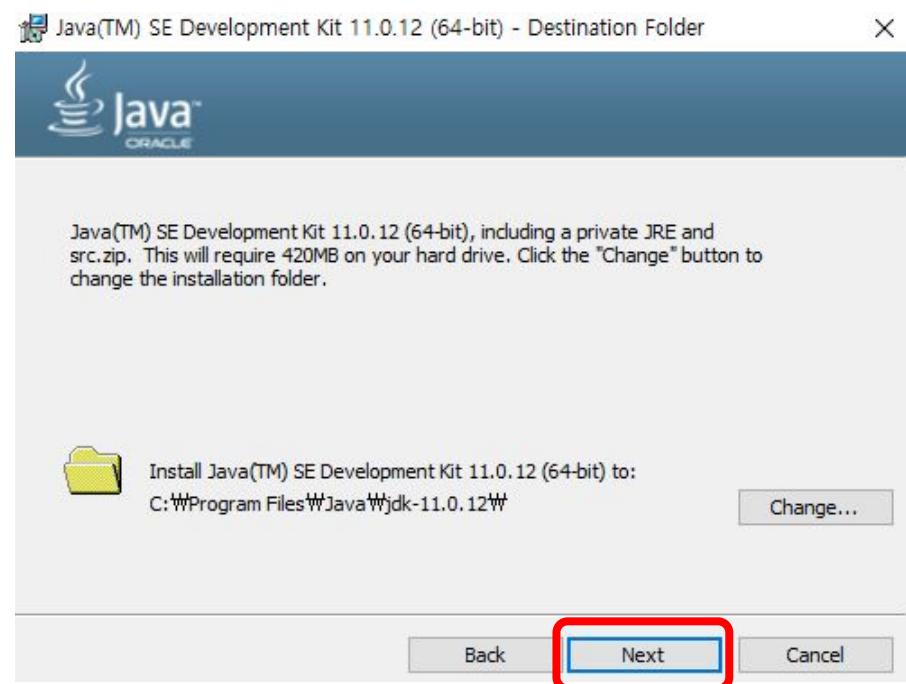
클릭하여 아래 모든 사항에 동의



[For Windows] Install JDK

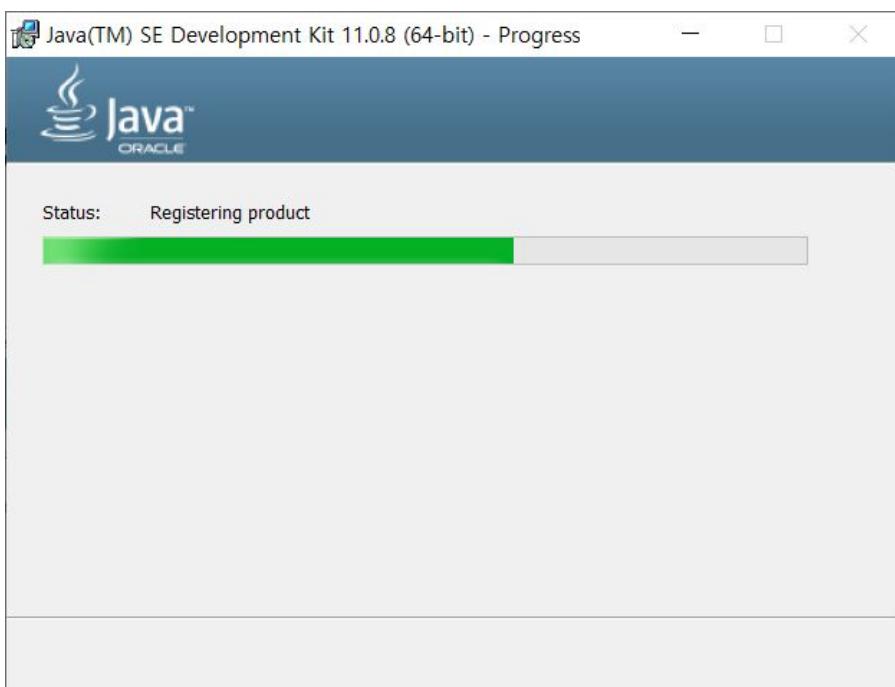
[For Mac Users] Go to slide #19

- Run JDK installer



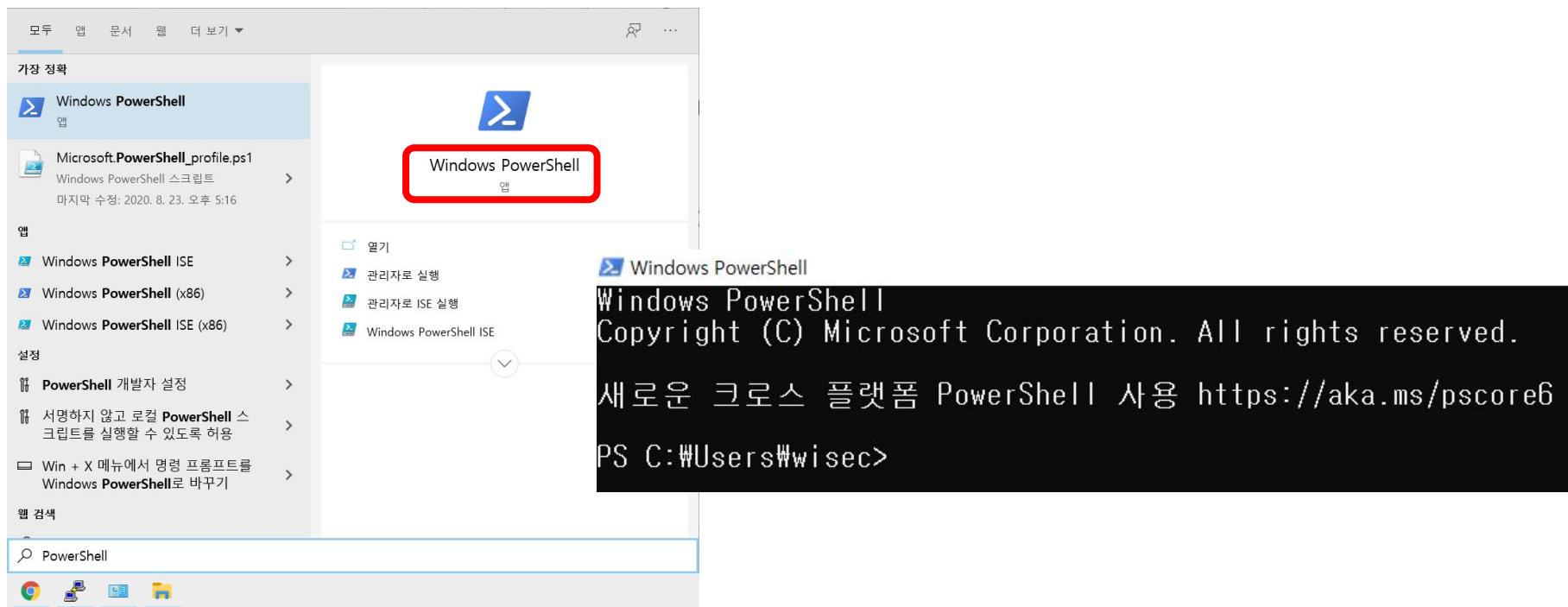
[For Windows] Install JDK

- JDK is successfully installed



[For Windows] Install JDK

1. Press 
2. Type “PowerShell”



[For Windows] Install JDK

- Type “java -version” in PowerShell

```
PS C:\Users\user> java -version
java version "11.0.12" 2021-07-20 LTS
Java(TM) SE Runtime Environment 18.9 (build 11.0.12+8-LTS-237)
Java HotSpot(TM) 64-Bit Server VM 18.9 (build 11.0.12+8-LTS-237, mixed mode)
```

Installation complete!
Go to slide #23

If it doesn't work...

- Type “java -version” in PowerShell
- PowerShell doesn’t recognize Java because Java path is not added to the system

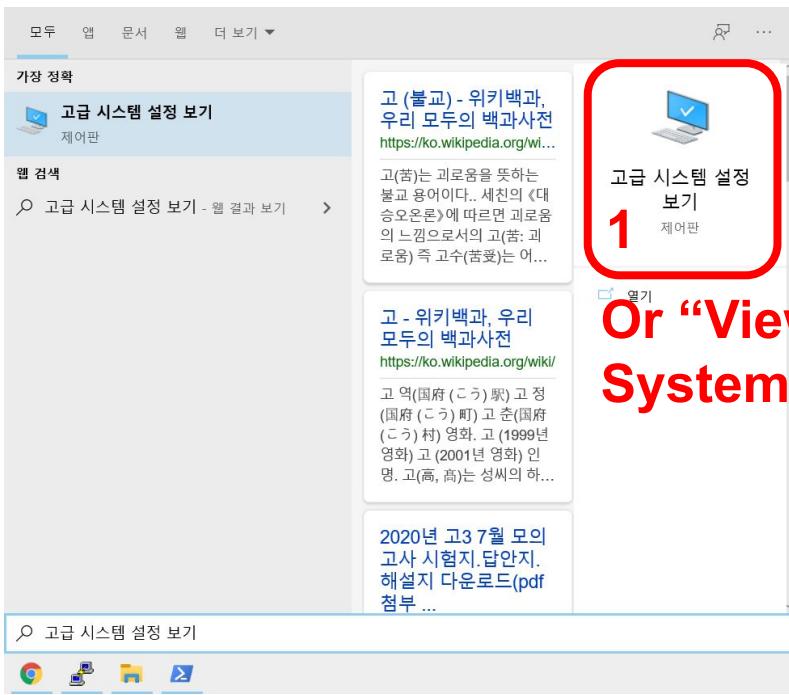
```
Windows PowerShell
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새로운 크로스 플랫폼 PowerShell 사용 https://aka.ms/pscore6

PS C:\Users\wise> java -version
java : 'java' 용어가 cmdlet, 함수, 스크립트 파일 또는 실행할 수 있는 프로그램 이름으로 인식되지 않습니다. 이름이 정확한지 확인하고 경로가 포함된 경우 경로가 올바른지 검증한 다음 다시 시도하십시오.
위치 줄:1 문자:1
+ java -version
+ ~~~~
+ CategoryInfo          : ObjectNotFound: (java:String) [], CommandNotFoundException
+ FullyQualifiedErrorId : CommandNotFoundException
```

Add Java Path to the System

- Type  + View Advanced System Settings" or "고급 시스템 설정 보기"

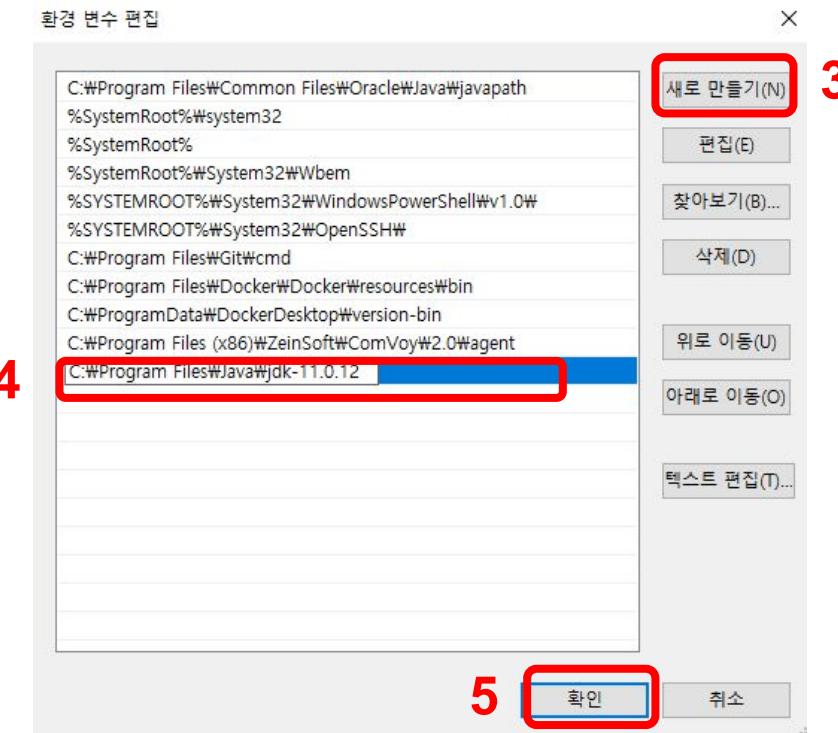
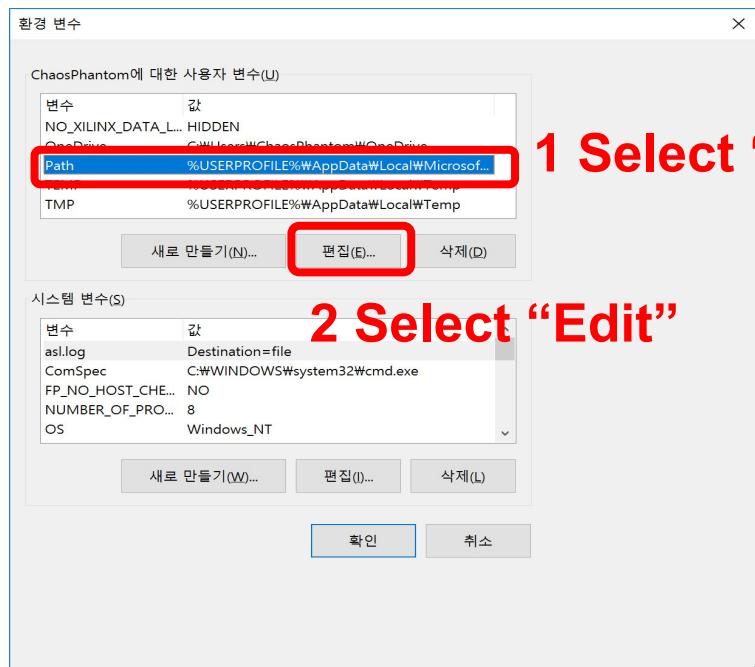


Or “View Advanced System Settings”



Add Java Path to the System

- Add “C:\Program Files\Java\jdk-11.0.12”
(\ and # are the same character)

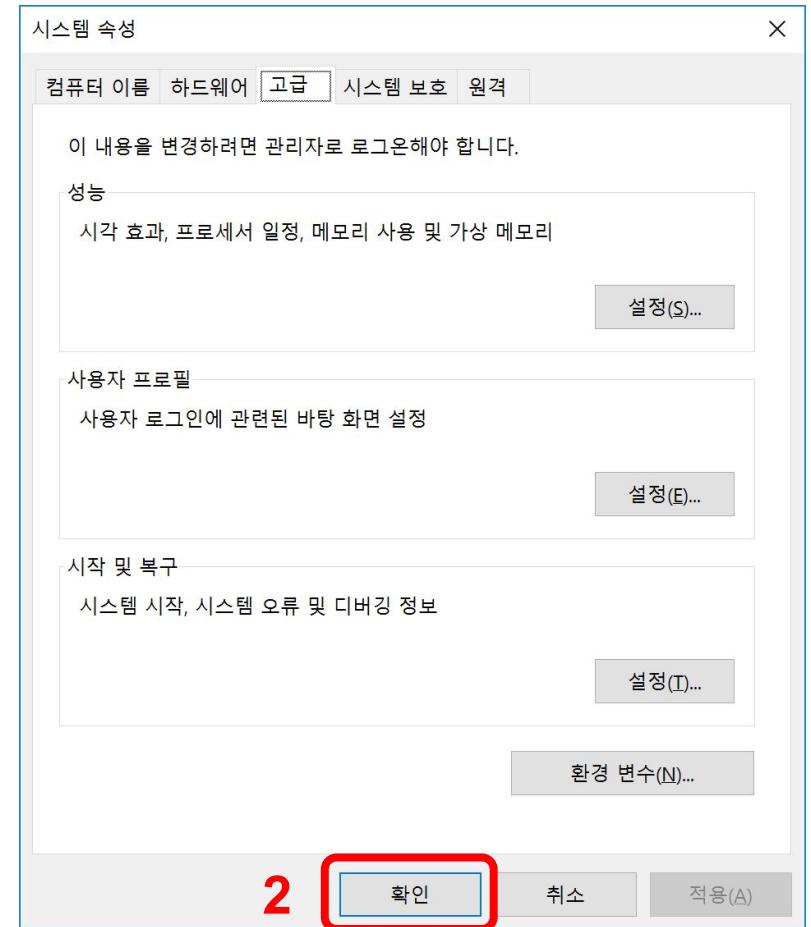
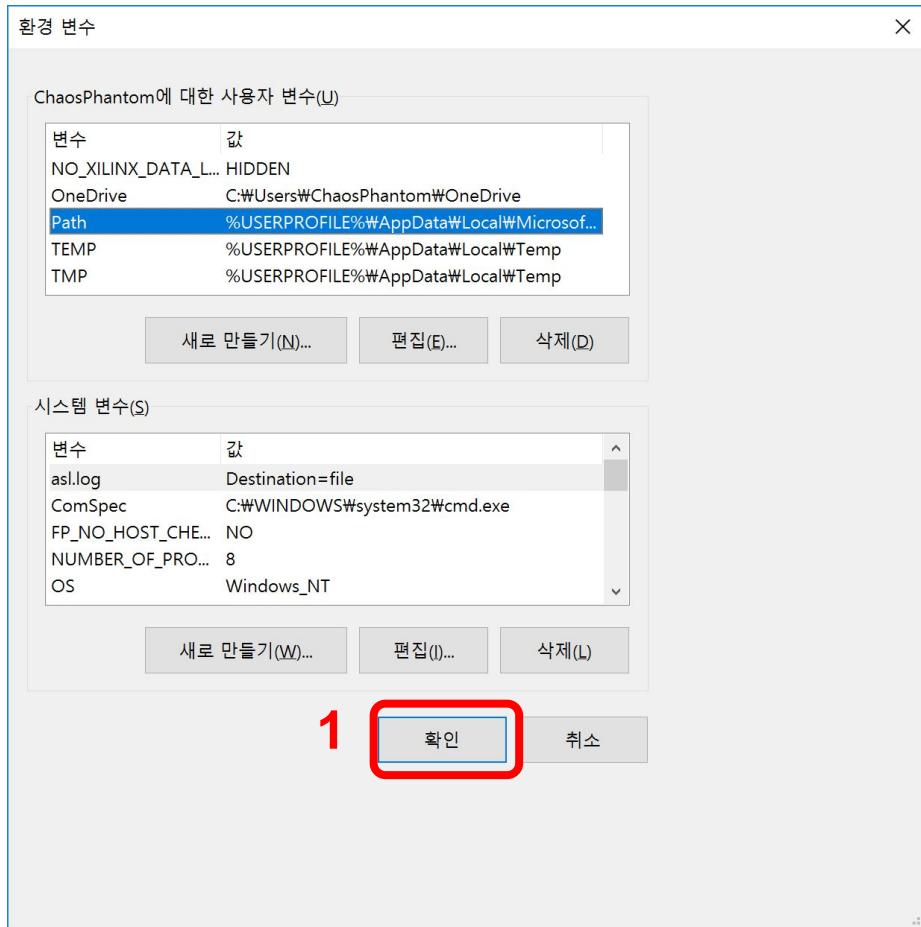


3

4

5

Add Java Path to the System



Add Java Path to the System

- Close and reopen PowerShell
- Now the system recognize Java

Windows PowerShell

Windows PowerShell

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새로운 크로스 플랫폼 PowerShell 사용 <https://aka.ms/pscore6>

PS C:\Users\wise> java -version

java version "11.0.8" 2020-07-14 LTS

Java(TM) SE Runtime Environment 18.9 (build 11.0.8+10-LTS)

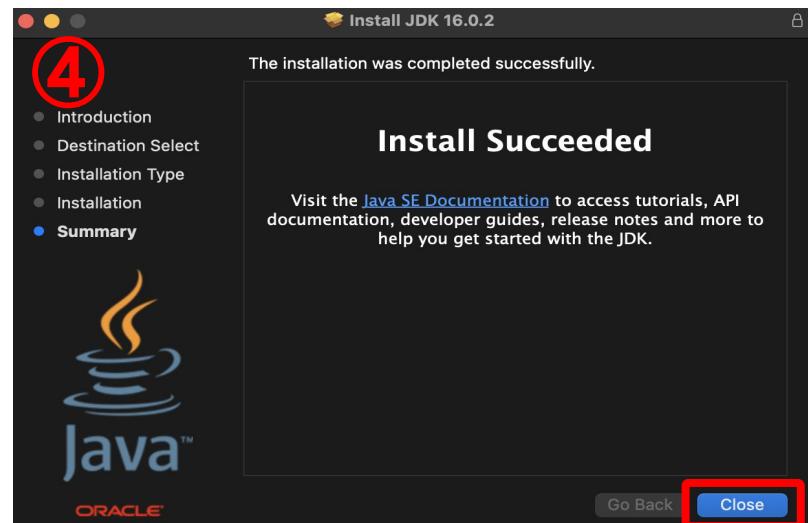
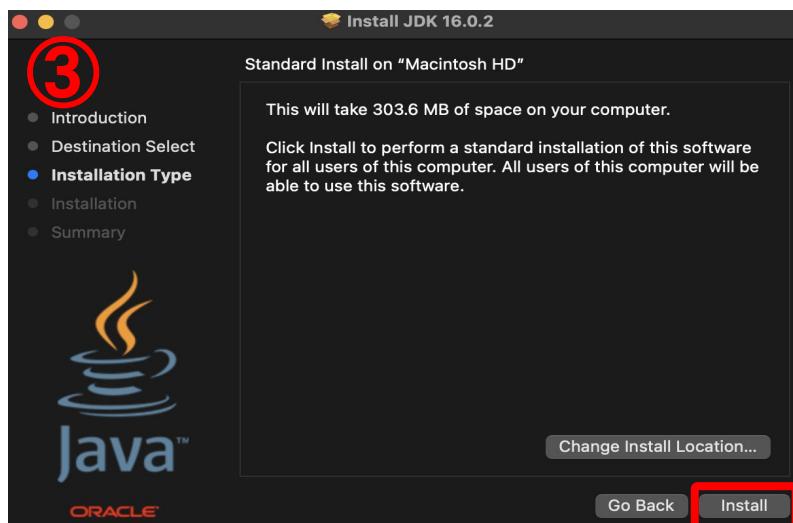
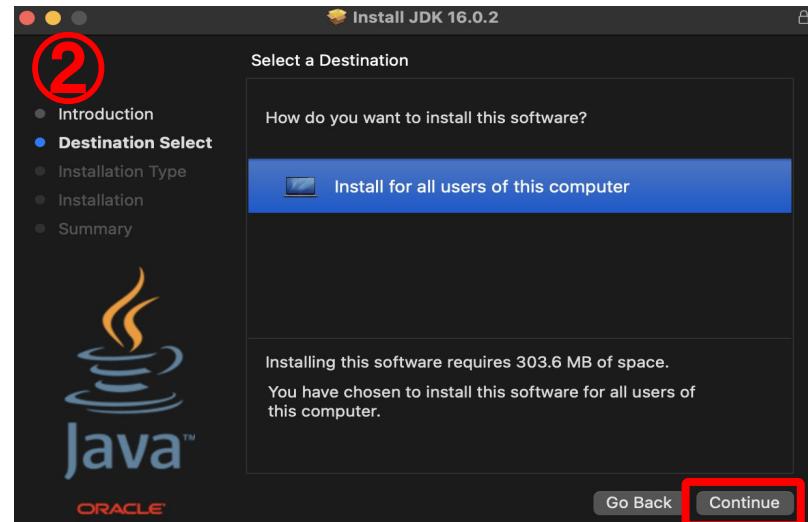
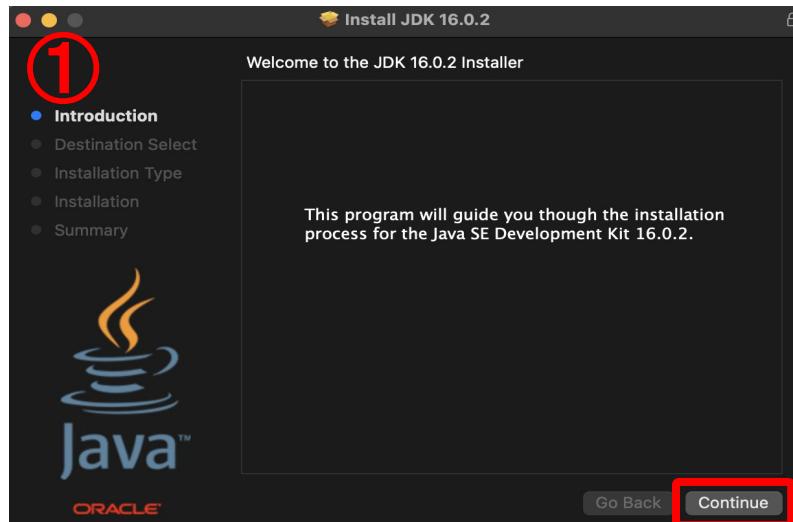
Java HotSpot(TM) 64-Bit Server VM 18.9 (build 11.0.8+10-LTS, mixed mode)

[For macOS] Download JDK installer

- <https://www.oracle.com/kr/java/technologies/java-e-jdk11-downloads.html>

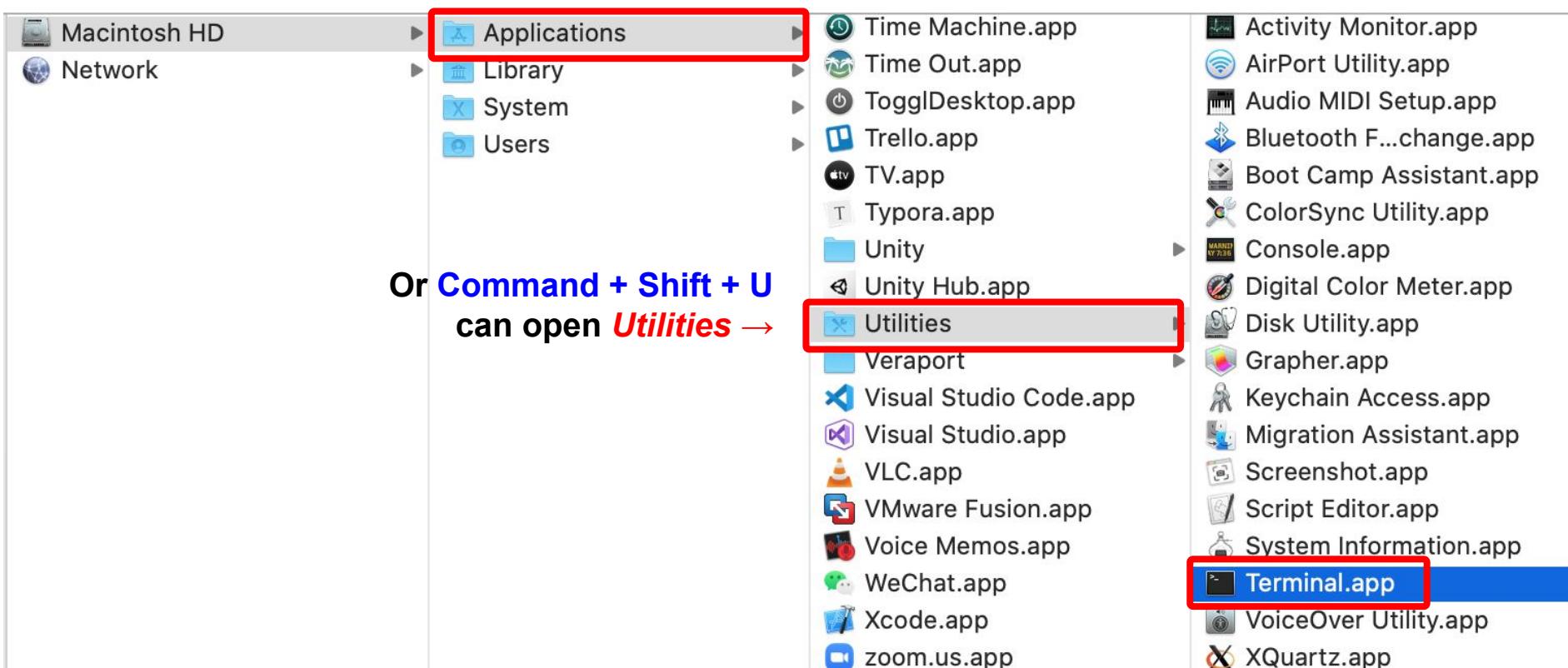
Product / File Description	File Size	Download
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Solaris SPARC Compressed Archive	184.5 MB	jdk-11.0.12_solaris-sparcv9_bin.tar.gz
Windows x64 Installer	151.83 MB	jdk-11.0.12_windows-x64_bin.exe
Windows x64 Compressed Archive	171.27 MB	jdk-11.0.12_windows-x64_bin.zip

[For macOS] Install Java



[For macOS] Check Java Installation

- Open Terminal.app



[For macOS] Check Java Installation

- Enter **java --version** in the terminal to check if JAVA installation was successful.

```
~ ➤ java -version
java version "11.0.12" 2021-07-20 LTS
Java(TM) SE Runtime Environment 18.9 (build 11.0.12+8-LTS-237)
Java HotSpot(TM) 64-Bit Server VM 18.9 (build 11.0.12+8-LTS-237, mixed mode)
```

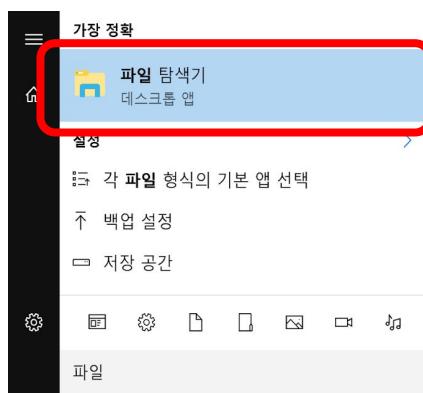
Developing Environment of the course

- Official developing environment for scoring
 - JDK 11.0.12
- Although it is likely that later versions will also be okay, we recommend using the same version (version 11) just in case.

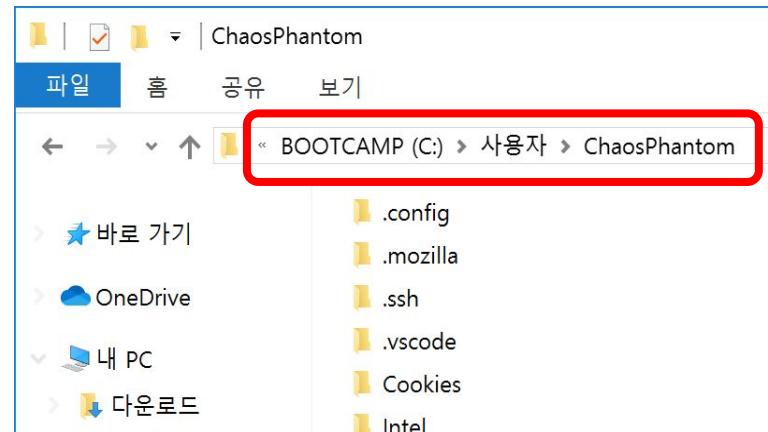
Write a Java Code

1. Type “File Explorer” or “파일 탐색기”
2. Go to

“C:\Users\<COMPUTER_ACCOUNT_NAME>”
or “C:\사용자\<컴퓨터 계정 이름>”

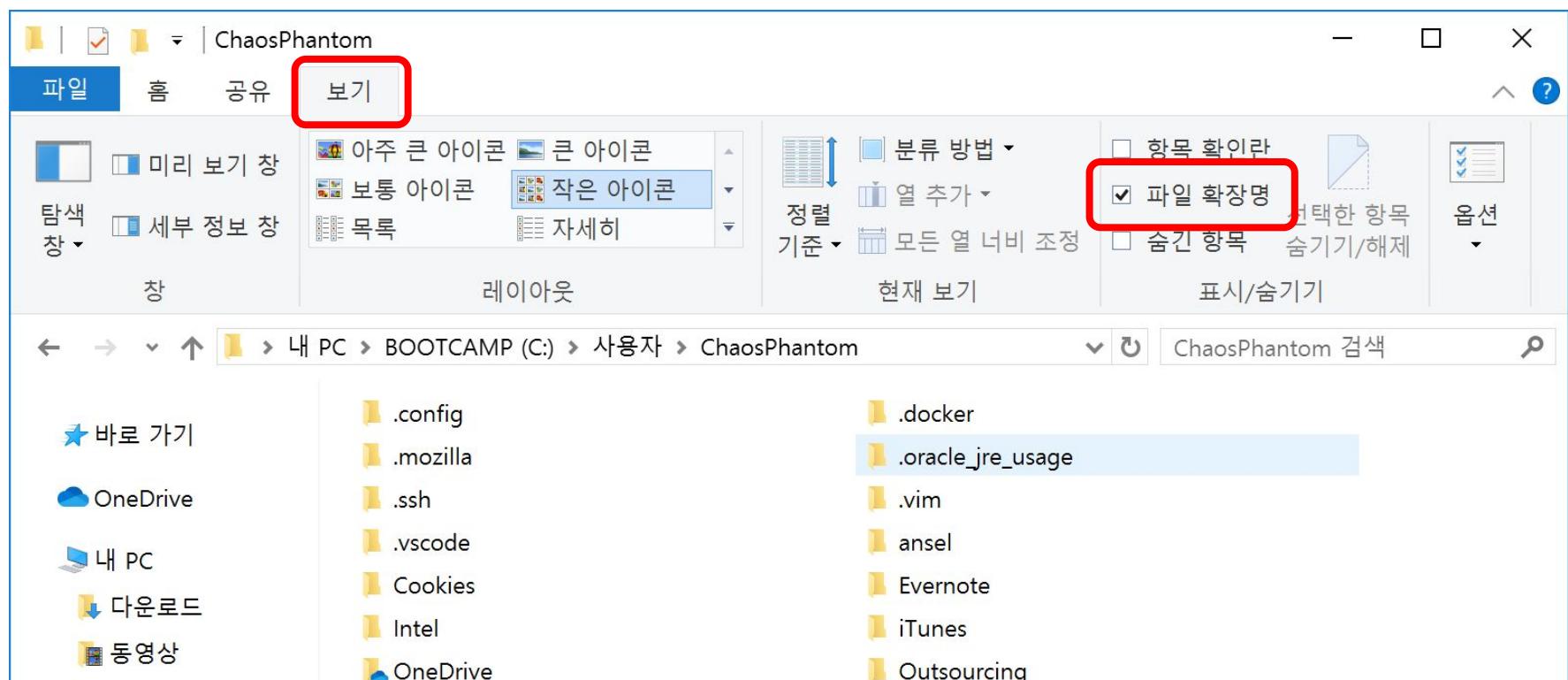


or “File Explorer”



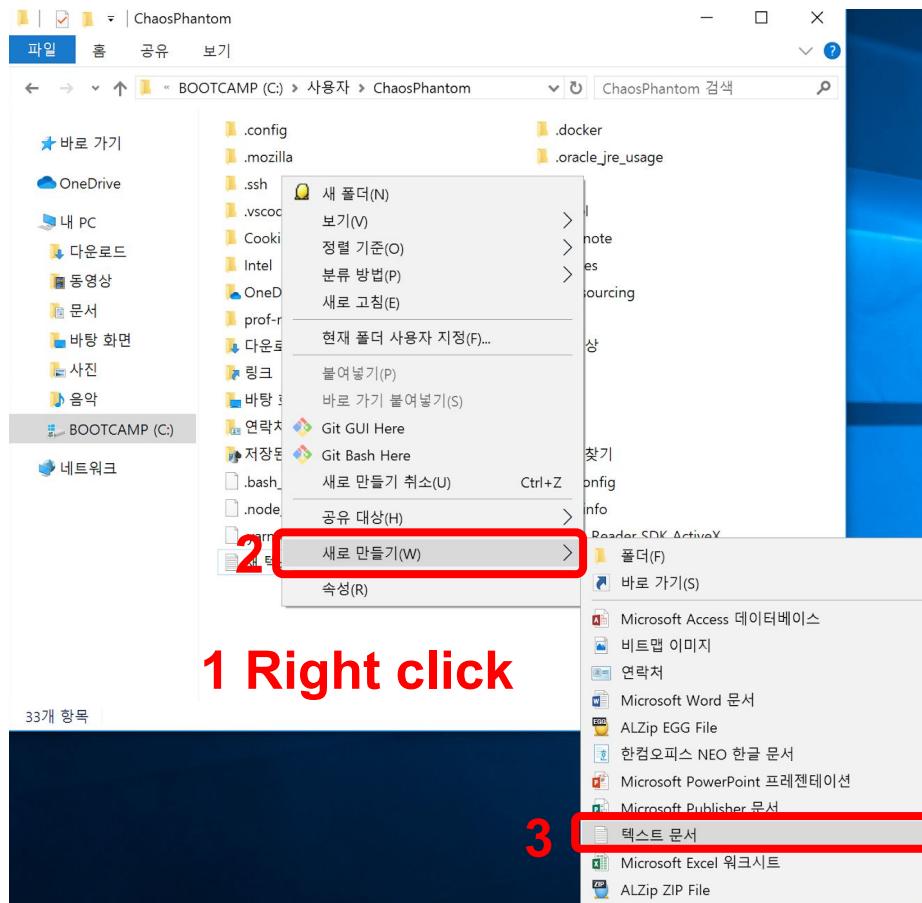
Write a Java Code

- Show file extensions



Write a Java Code

- Create a new text file

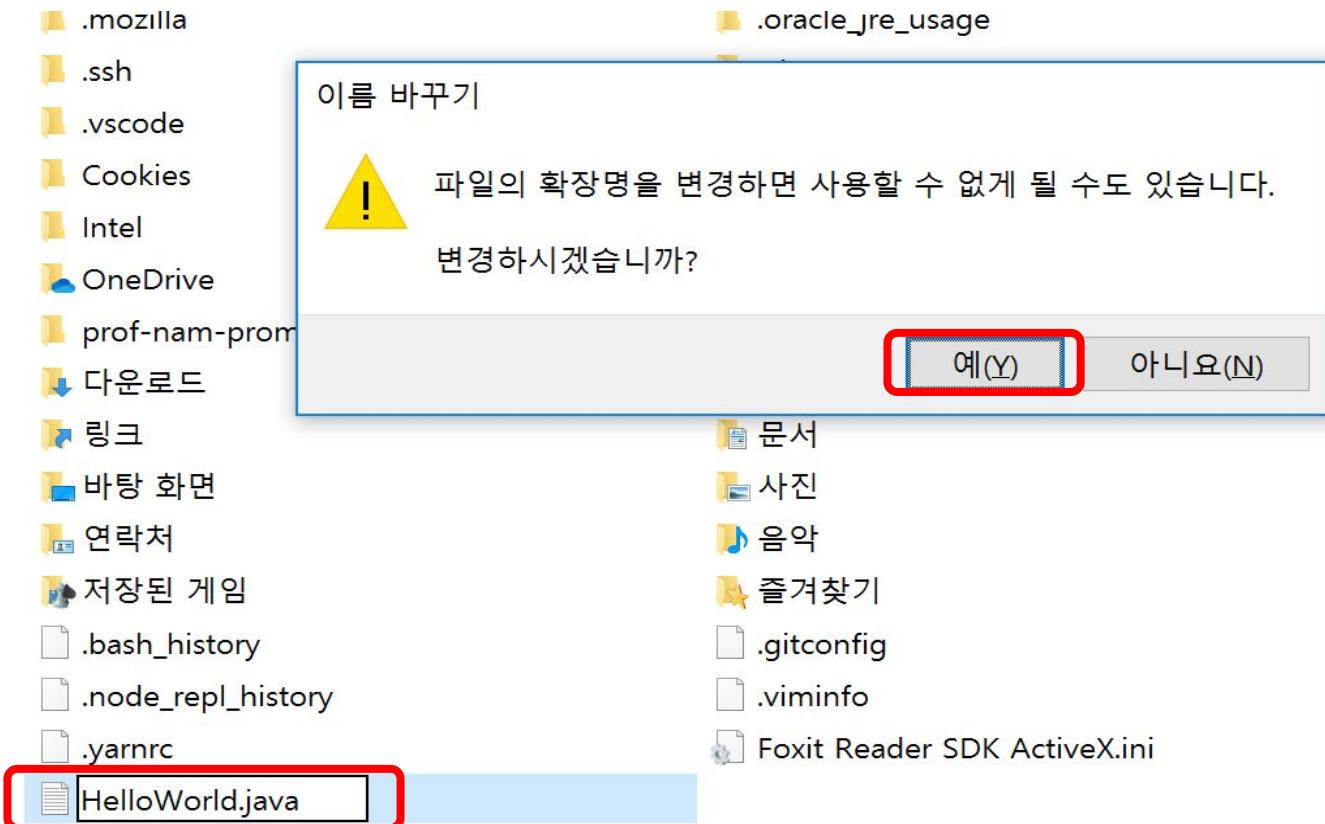


1 Right click

3

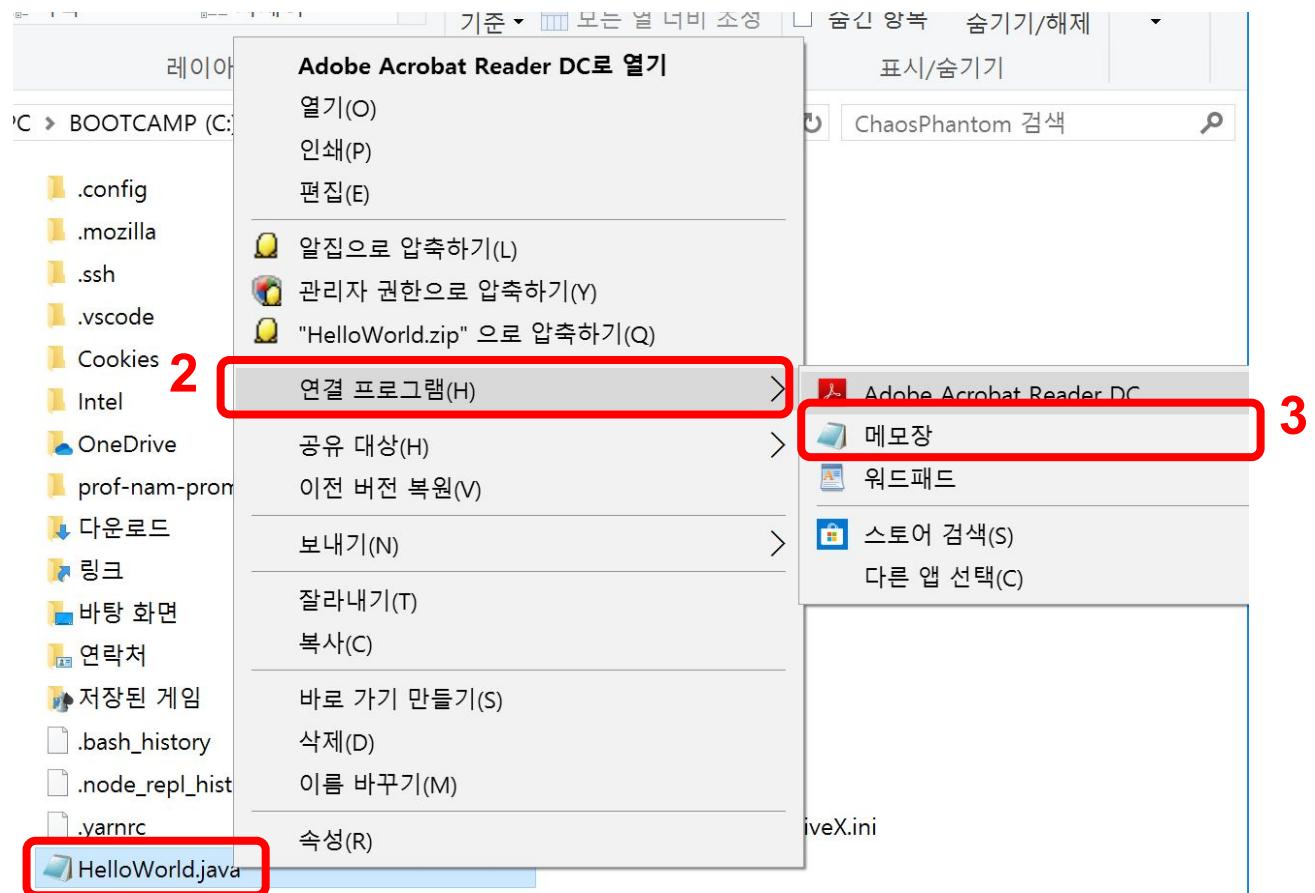
Write a Java Code

- Rename the text file “HelloWorld.java”
- Ensure that the extension is not “.txt”



Write a Java Code

- Open the Java file with text editor



1 Right click

Write a Java Code

- Write the code and save the file



HelloWorld.java - 메모장

파일(F) 편집(E) 서식(O) 보기(V) 도움말(H)

```
class HelloWorld {  
    public static void main(String[] args) {  
        System.out.println("Hello World!");  
    }  
}
```

Run a Java Program

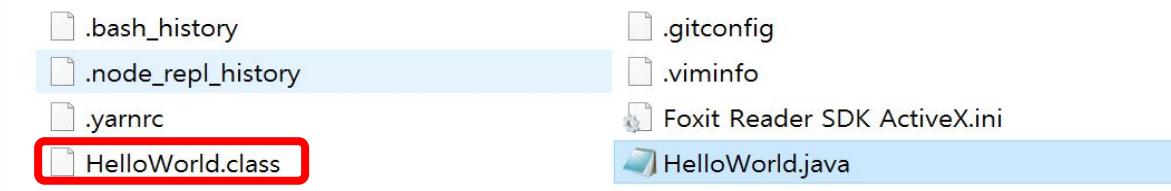
- Type “javac HelloWorld.java” in PowerShell (Terminal for macOS) and Java executable file “HelloWorld.class” is created



```
Windows PowerShell
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새로운 크로스 플랫폼 PowerShell 사용 https://aka.ms/pscore6

PS C:\Users\wisee> javac HelloWorld.java
PS C:\Users\wisee>
```



Run a Java Program

- Type “java HelloWorld” to execute “HelloWorld.class” file
- You just ran your first Java program!

Windows PowerShell

Windows PowerShell

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새로운 크로스 플랫폼 PowerShell 사용 <https://aka.ms/pscore6>

```
PS C:\Users\wisee> java HelloWorld
Hello, world!
```

Introduction to IDE

- Writing Java code in text editor and compiling it manually is very exhausting and repetitive work especially in big and complex projects
- Instead, programmers use **IDE** to develop softwares

IDE (Integrated Development Environment)

- Software application that provides comprehensive facilities to computer programmers for software development
 - Code editor: autocomplete, syntax highlighting, etc.
 - Build automation tools: Automatic compile
 - Debuggers
- IDEs for Java Programming



BlueJ



DrJava



Eclipse

IntelliJ IDEA

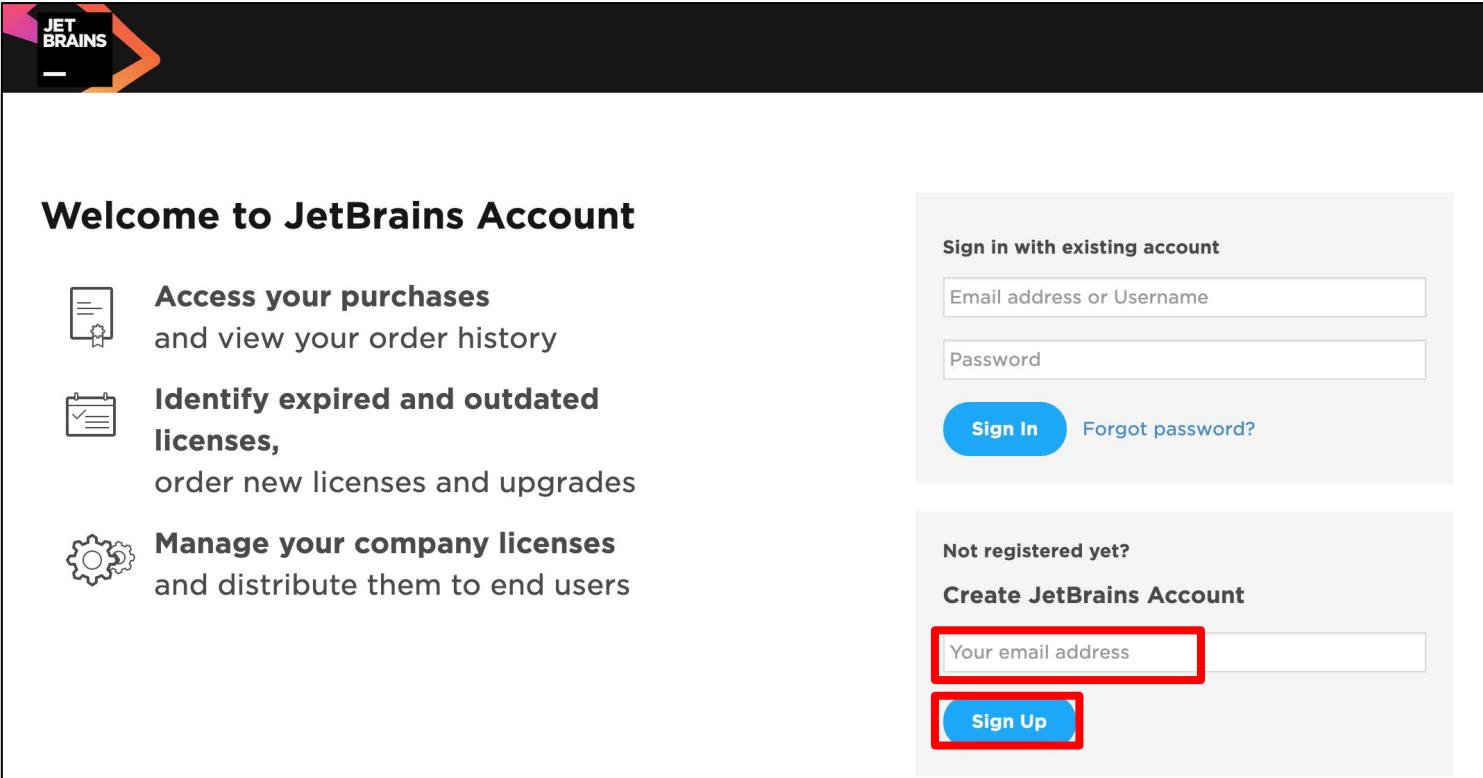


- We use IntelliJ IDEA for Java programming in this class
- The most popular Java IDE
- Developed by Jetbrains which develops other popular IDEs like Android Studio, Pycharm, etc.

JetBrains Account Creation

- Create a JetBrains account with your SNU email account (xxx@snu.ac.kr).

Link: <https://account.jetbrains.com/login>



The screenshot shows the "Welcome to JetBrains Account" page. On the left, there are three sections with icons and text:

- Access your purchases** and view your order history
- Identify expired and outdated licenses,** order new licenses and upgrades
- Manage your company licenses** and distribute them to end users

On the right, there are two main forms:

- Sign in with existing account:** Contains fields for "Email address or Username" and "Password", and buttons for "Sign In" and "Forgot password?".
- Create JetBrains Account:** Contains a field for "Your email address" and a "Sign Up" button, which is highlighted with a red box.

JetBrains Account Creation

- Check your email

☆ Complete your account registration

🏷️ Click here to add a Tag

From : JetBrains Account <no_reply@jetbrains.com> | Add to Contacts | Report as Spam

Date : 2019.11.13 15:18

— <ckrgksakdmac@snu.ac.kr> | Add to Contacts

Hello!

Thank you for creating your JetBrains Account.

To complete your registration, click the link below:

[Confirm your account](#)

Yours truly,
The JetBrains Team
<https://www.jetbrains.com>
The Drive to Develop

JetBrains Account Creation

- Enter some information and click submit

Welcome to JetBrains Account!

Please complete the registration form below

Email Address ckrqksakdmac@snu.ac.kr

First Name

Last Name

Username
Latin symbols (A-z), digits (0-9) or a valid email address 5 to 100 characters long.

Please make sure you choose a strong password as your account will have access to your purchases.

Password

Repeat Password
Password must contain 8 or more characters at least 3 types:
- uppercase (A-Z); - digits (0-9);
- lowercase (a-z); - non-alphanumeric (!, @, #, etc.)

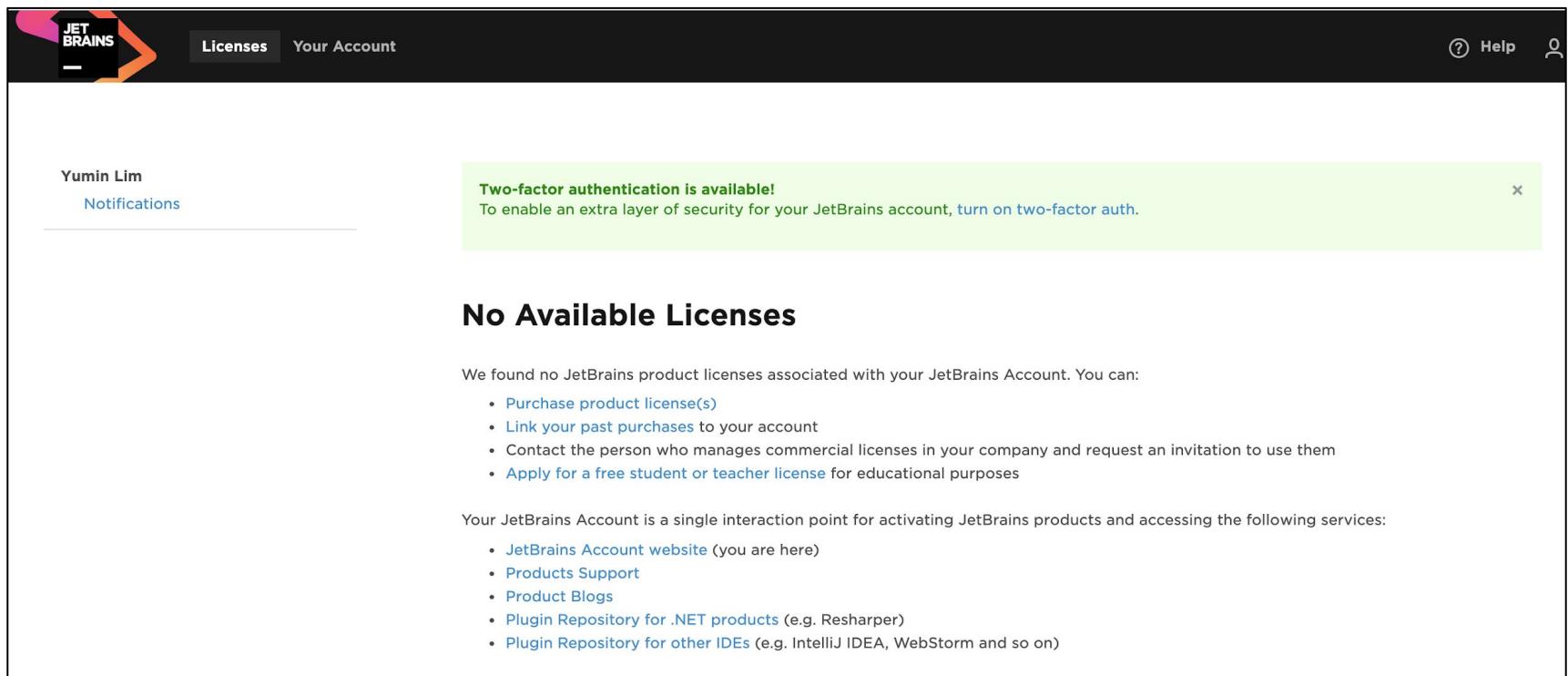
I have read and I accept the [JetBrains Account Agreement](#)

I consent to the use of my name, email address, and location data in email communication concerning JetBrains products held or services used by me or my organization [More](#)

Submit

JetBrains Account Creation

- Account is created!



The screenshot shows the JetBrains Account creation interface. At the top, there's a navigation bar with the JetBrain logo, 'Licenses', 'Your Account', and 'Help'. Below the navigation, a user profile section shows 'Yumin Lim' and 'Notifications'. A green notification box displays the message: 'Two-factor authentication is available! To enable an extra layer of security for your JetBrains account, turn on two-factor auth.' with a close button 'x'. The main content area has a heading 'No Available Licenses' and text explaining how to find product licenses. It also lists services available through the account.

Yumin Lim

Notifications

Two-factor authentication is available!
To enable an extra layer of security for your JetBrains account, turn on two-factor auth.

No Available Licenses

We found no JetBrains product licenses associated with your JetBrains Account. You can:

- Purchase product license(s)
- Link your past purchases to your account
- Contact the person who manages commercial licenses in your company and request an invitation to use them
- Apply for a free student or teacher license for educational purposes

Your JetBrains Account is a single interaction point for activating JetBrains products and accessing the following services:

- [JetBrains Account website](#) (you are here)
- [Products Support](#)
- [Product Blogs](#)
- [Plugin Repository for .NET products](#) (e.g. Resharper)
- [Plugin Repository for other IDEs](#) (e.g. IntelliJ IDEA, WebStorm and so on)

JetBrains License Activation

- Go to <https://www.jetbrains.com/shop/eform/students> and enter some information

Apply with: [University email address](#) [ISIC/ITIC membership](#) [Official document](#) [GitHub](#)

Status: I'm a student I'm a teacher

Level of study: Undergraduate

Is Computer Science or Engineering your major field of study? Yes No

Graduation date: Choose
Choose expected graduation date.

Email address: You SHOULD use your SNU email.
I certify that the university email address provided above is valid and belongs to me.

Name: Your **real name** as it appears in your passport, driver's license, or other legal documents.
First Name Last Name

Country / region: Korea

I am under 13 years old

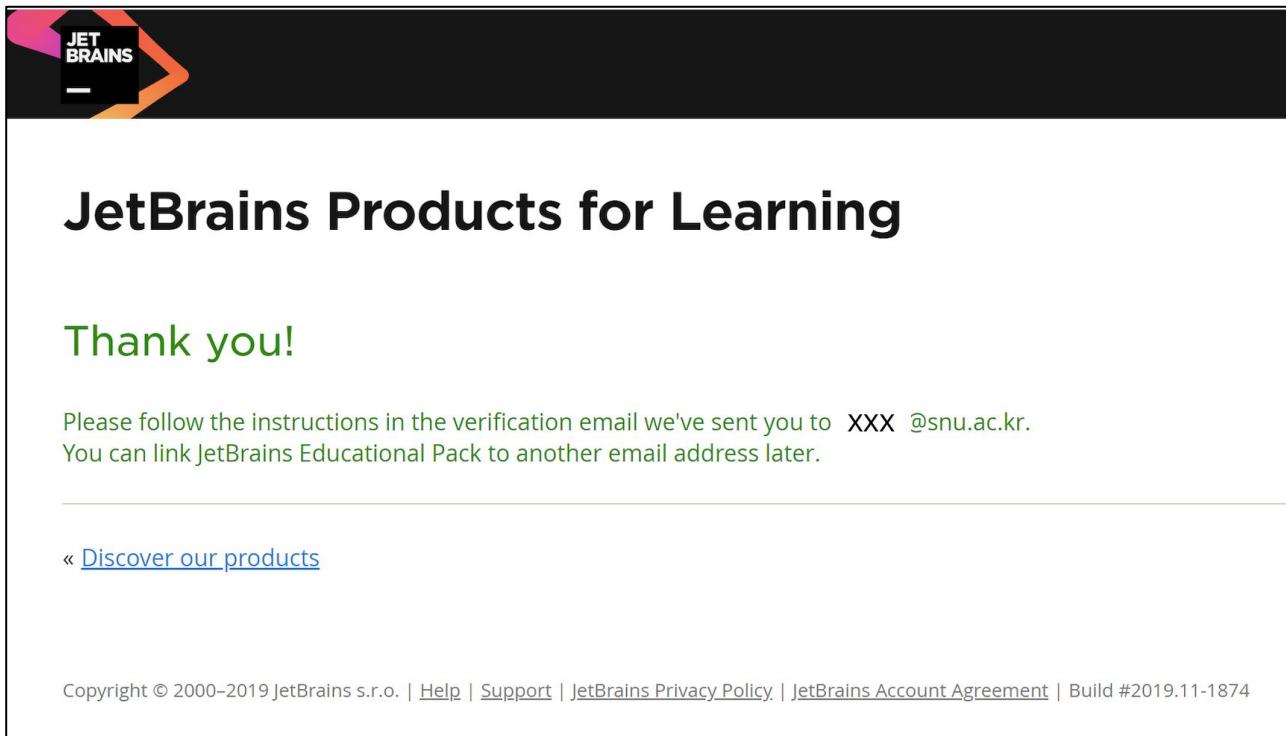
I have read and I accept the [JetBrains Account Agreement](#)

I consent to the use of my name, email address, and location data in email communication concerning JetBrains products held or services used by me or my organization. [More](#)

APPLY FOR FREE PRODUCTS

JetBrains License Activation

- Verification email is sent to your SNU mail.



The image shows a screenshot of an email from JetBrains. The header features the 'JET BRAINS' logo with a stylized orange and pink arrow graphic. The main content area has a white background and a black border. At the top, it says 'JetBrains Products for Learning'. Below that, a green 'Thank you!' message is displayed. A green note follows: 'Please follow the instructions in the verification email we've sent you to XXX @snu.ac.kr. You can link JetBrains Educational Pack to another email address later.' At the bottom, there's a blue link '« Discover our products' and a small copyright notice at the very bottom.

JetBrains Products for Learning

Thank you!

Please follow the instructions in the verification email we've sent you to XXX @snu.ac.kr.
You can link JetBrains Educational Pack to another email address later.

« [Discover our products](#)

Copyright © 2000–2019 JetBrains s.r.o. | [Help](#) | [Support](#) | [JetBrains Privacy Policy](#) | [JetBrains Account Agreement](#) | Build #2019.11-1874

JetBrains License Activation

- Go to your email service and confirm the activation request.

JetBrains Educational Pack Confirmation 닫기

JetBrains Account <no_reply@jetbrains.com>
나에게 ▾

Hi,

You've received this email because your email address was used for registering/updating your JetBrains account.

Please follow this link to confirm your decision and start using JetBrains Educational Pack.

[Confirm Request](#)

Yours truly,
The JetBrains Team
<https://www.jetbrains.com>
The Drive to Develop

TOOLBOX SUBSCRIPTION AGREEMENT FOR EDUCATION

Version 3.2, effective as of June 26th, 2019

IMPORTANT! READ CAREFULLY:

THIS IS A LEGAL AGREEMENT. BY CLICKING ON THE «I AGREE» (OR SIMILAR) BUTTON THAT IS PRESENTED TO YOU AT THE TIME OF YOUR PURCHASE, OR BY DOWNLOADING, INSTALLING, COPYING, SAVING ON YOUR DEVICE, OR OTHERWISE USING JETBRAINS SOFTWARE, SUPPORT OR PRODUCTS, YOU ARE BECOMING A PARTY TO THIS AGREEMENT, YOU DECLARE YOU HAVE THE LEGAL CAPACITY TO ENTER INTO SUCH AGREEMENT, AND YOU ARE CONSENTING TO BE BOUND BY ALL THE TERMS AND CONDITIONS SET FORTH BELOW.

1. PARTIES

1.1. «JetBrains» or «We» means JetBrains s.r.o., having its principal place of business at Na Hrebenech II 1718/10, Prague, 14000, Czech Republic, registered in the Commercial Register maintained by the Municipal Court of Prague, Section C, File 86211, ID. No.: 265 02 275.

1.2. «Customer» or «You» means a student or an instructor specified in the Subscription Confirmation who is at least 13 years old, or in the case of Redistributable Products the sole proprietor or legal entity with sufficient legal capacity to enter into this Agreement using the Redistributable Product in accordance with this Agreement. For the purpose of this Agreement:
(A) «student» is an individual who is enrolled at a recognized educational institution (university, college, high school, primary school or a similar institution with educational goals), and upon request by JetBrains is able to provide proof of such enrollment;
(B) «instructor» is an individual who gives lectures and/or seminars at a recognized educational institution (university, college, high school, primary school or a similar institution with educational goals), and upon request by JetBrains is able to provide proof of such involvement.

2. DEFINITIONS

Please review and accept this license agreement to proceed with product activation.

Please read to the bottom of the document before continuing.

Copyright © 2000–2019 JetBrains s.r.o. | Help | Support | JetBrains Privacy Policy | JetBrains Account Agreement | Build #2019.11-1874

I Accept

Scroll to the bottom and click the accept bottom.



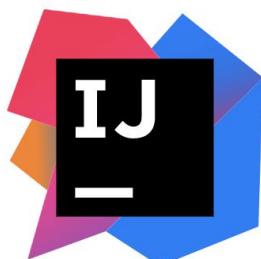
JetBrains License Activation

- You should see “JetBrains Product Pack for Students”.

The screenshot shows the JetBrains License Activation interface. At the top, there's a navigation bar with the Jet Brains logo, 'Licenses', 'Your Account', and a user icon. A green notification bar at the top right says 'Two-factor authentication is available! To enable an extra layer of security for your JetBrains account, turn on two-factor auth.' Below this, a main section titled '1 License' displays the 'JetBrains Product Pack for Students'. It includes a 'Download' button, a 'License ID: XXXXXXXXXXXX' field, and detailed license information: 'Licensed to: Suhyun Lee', 'License restriction: For educational use only', and 'Valid through: November 12, 2020'. It also lists the included products: AppCode, dotTrace, ReSharper, CLion, GoLand, ReSharper C++, DataGrip, IntelliJ IDEA Ultimate, Rider, dotCover, PhpStorm, RubyMine, and WebStorm. At the bottom, it says 'After downloading and installing the software, simply run it and follow the on-screen prompts to sign in with your JetBrains Account.' A footer note at the very bottom reads 'Can't find your license here? Link your past purchases to your JetBrains Account by providing a license key or domain.'

Download IntelliJ IDEA

- <https://www.jetbrains.com/idea/download>
- Login if you are not logged in.



Version: 2021.2
Build: 212.4746.92
27 July 2021

[Release notes ↗](#)

Download IntelliJ IDEA

Choose the your OS

OS	Version	License
Windows	Ultimate	For web and enterprise development
macOS	Ultimate	For web and enterprise development
Linux	Ultimate	For web and enterprise development

Community

For JVM and Android development

Ultimate

For web and enterprise development

Download .exe ▾

Free 30-day trial

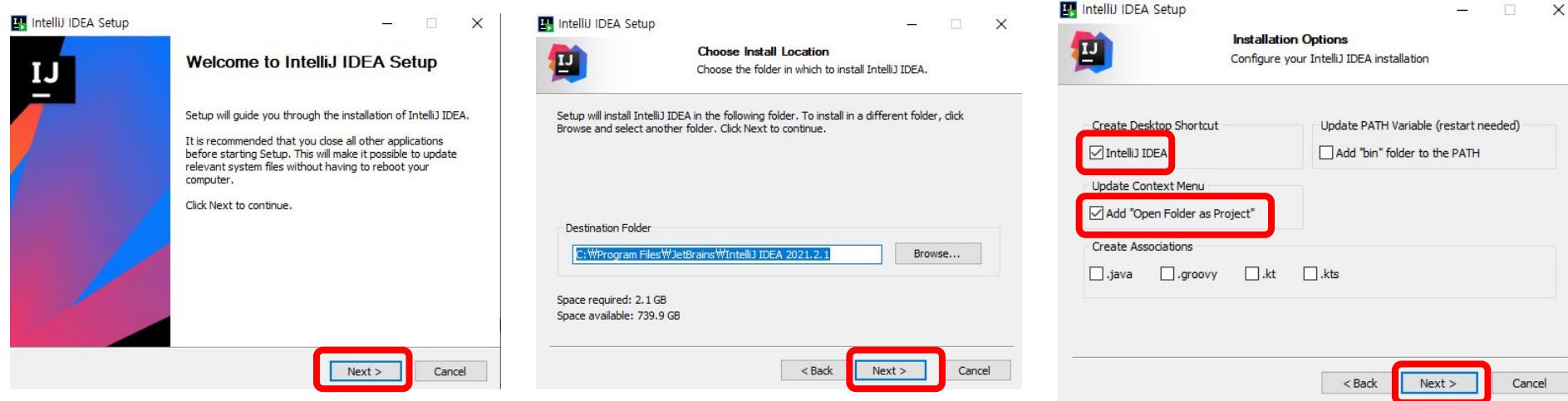
Download .exe ▾

Free, built on open source

- Download Ultimate version

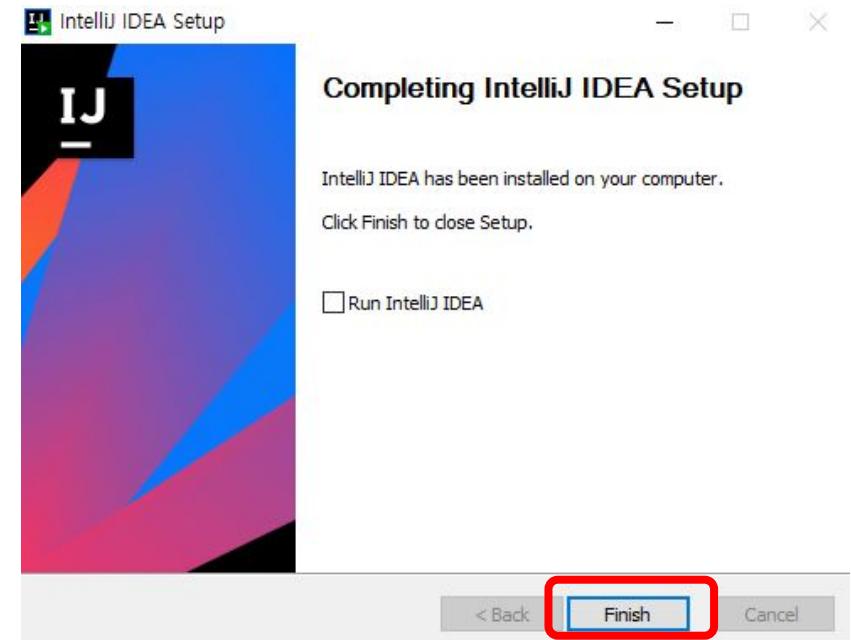
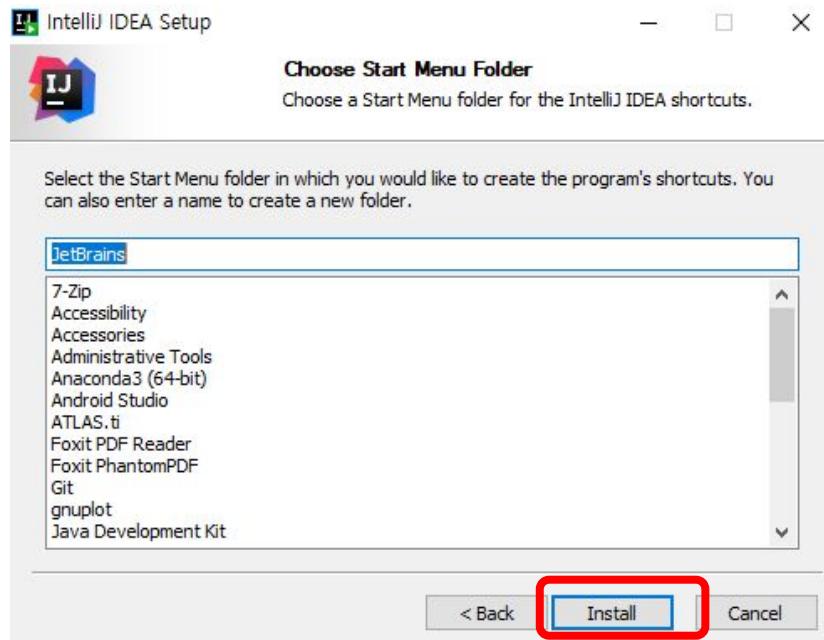
Install IntelliJ IDEA

- Execute the downloaded installer



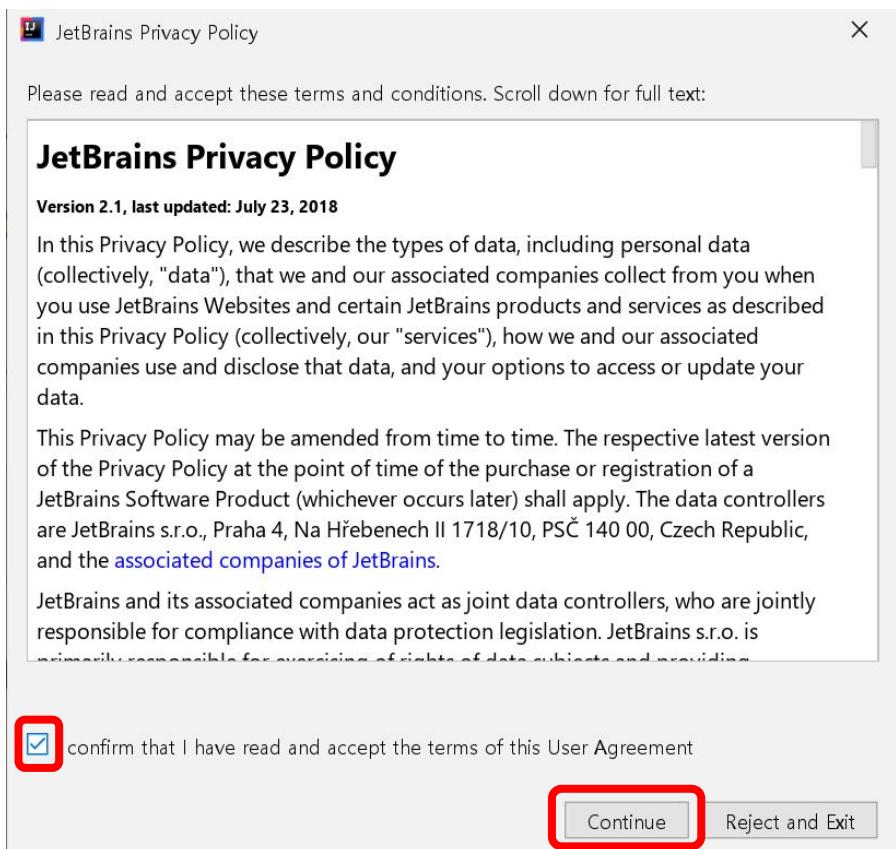
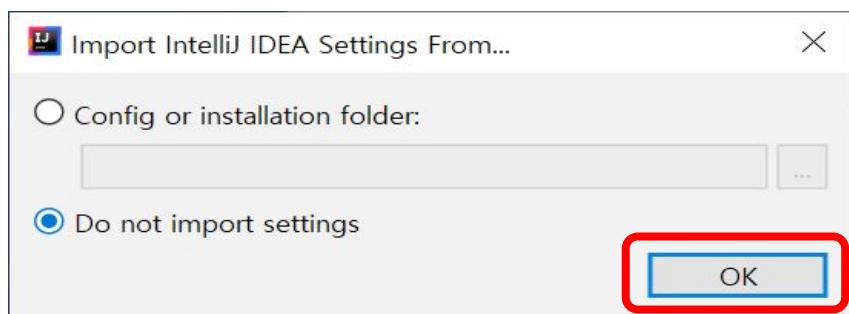
Install IntelliJ IDEA

- IntelliJ IDEA is Successfully installed



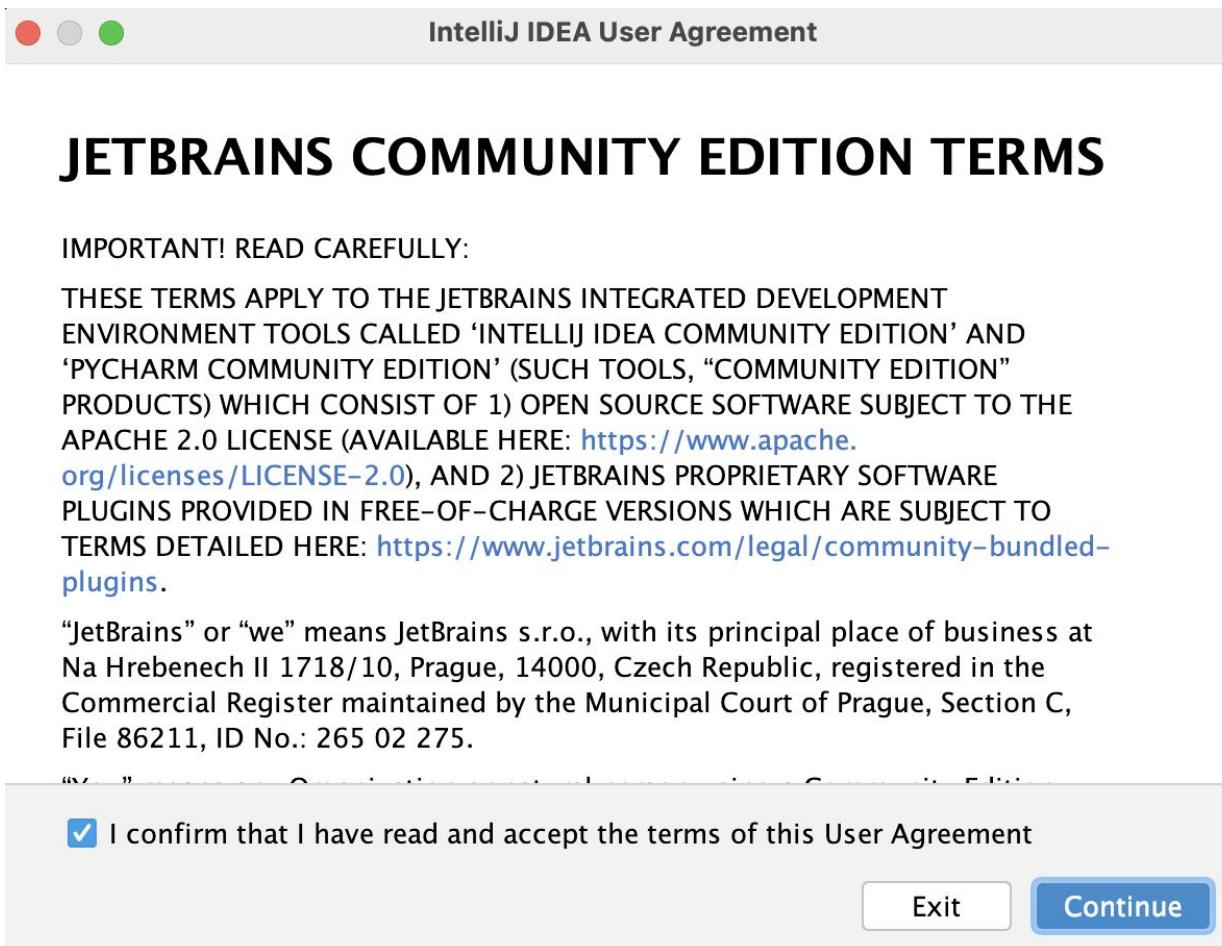
Configure IntelliJ IDEA Settings

- Run IntelliJ IDEA



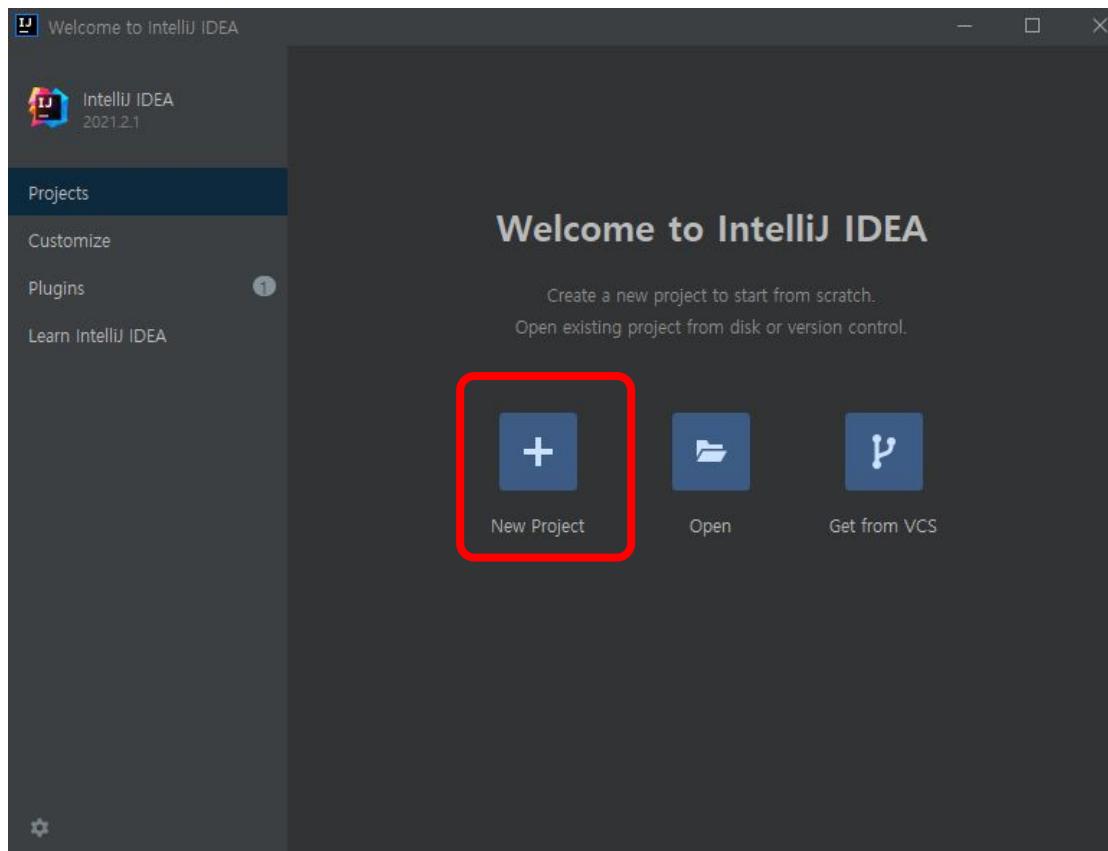
[For macOS] Install IntelliJ IDEA

- Execute the downloaded installer



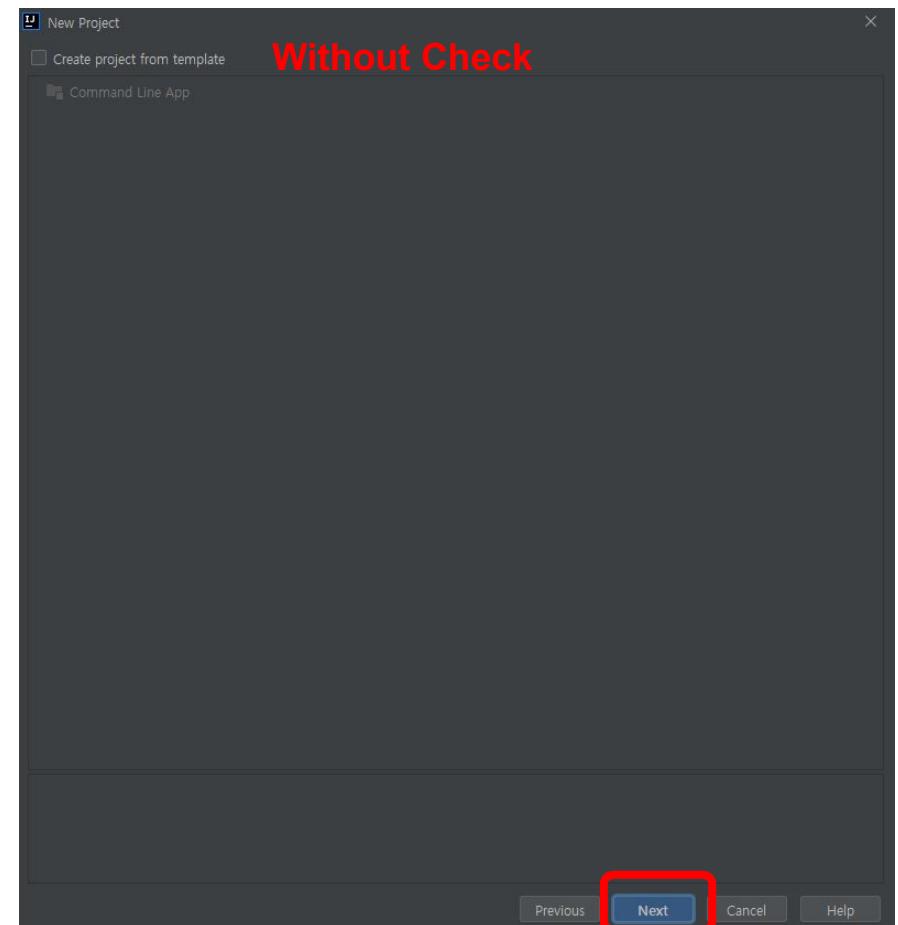
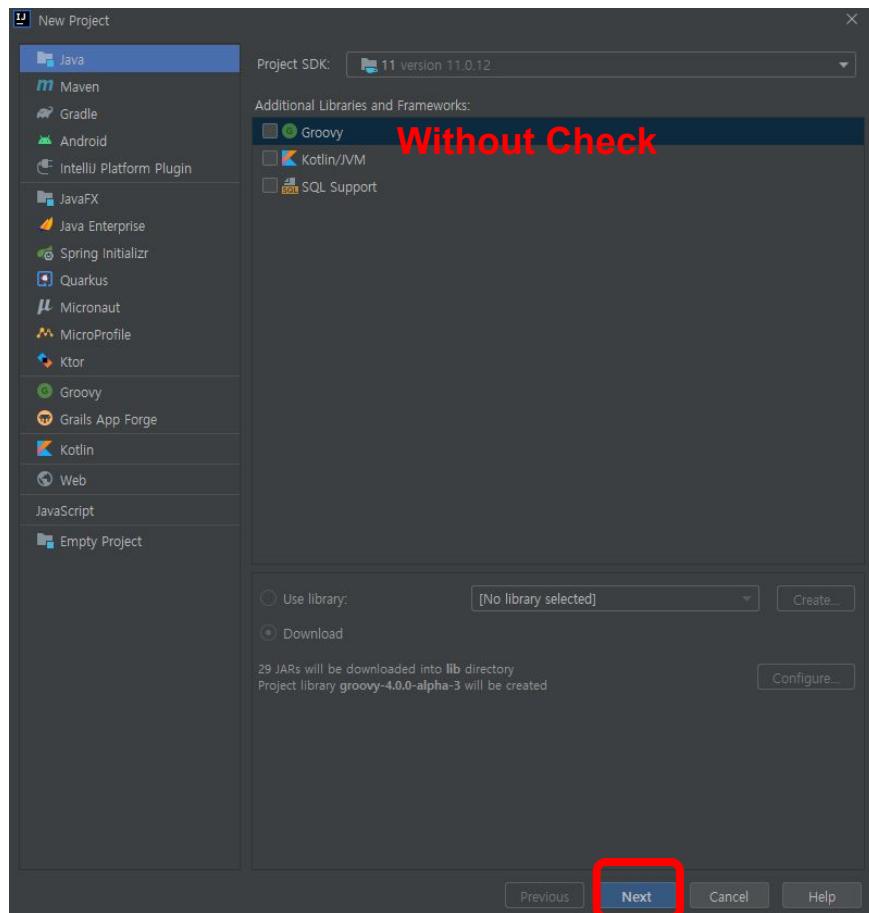
Run IntelliJ IDEA

- You see this window when run IntelliJ IDEA
- Let's create a new project



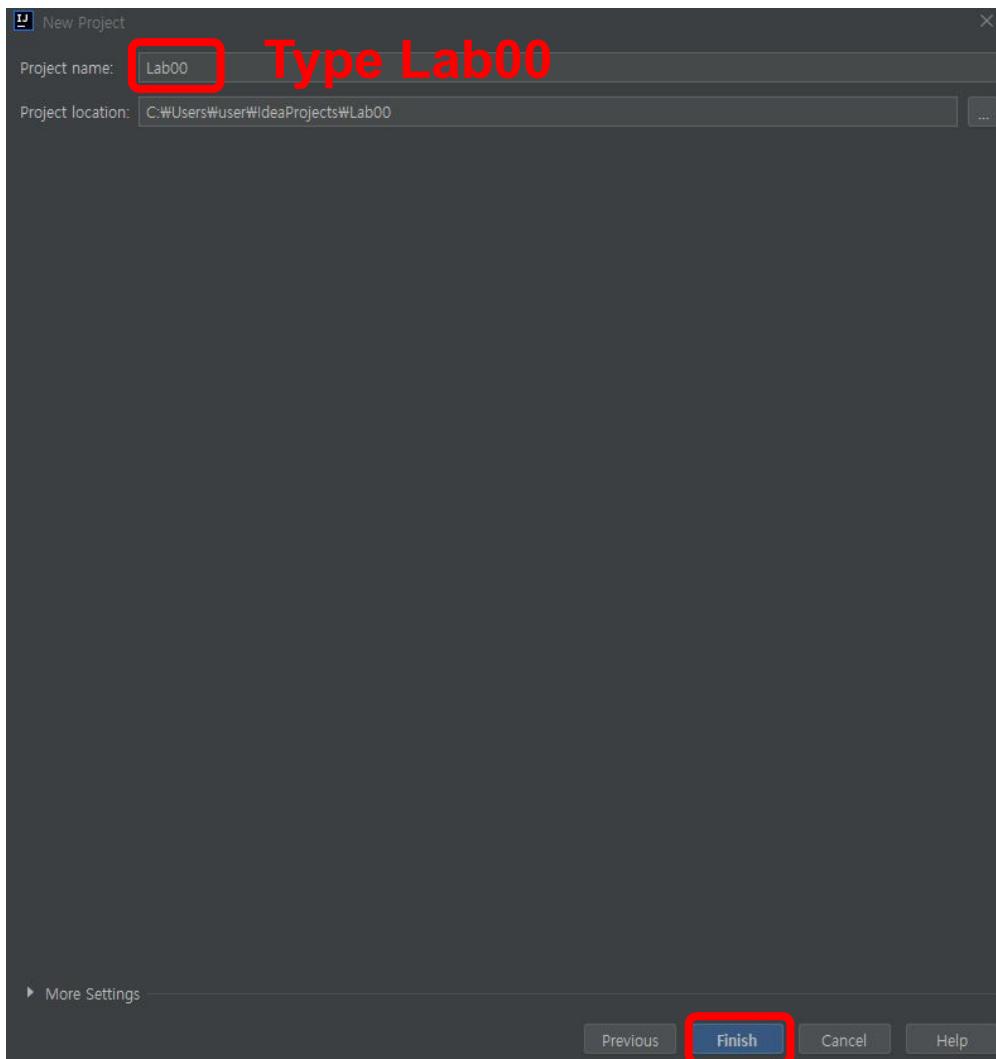


Create a New Project





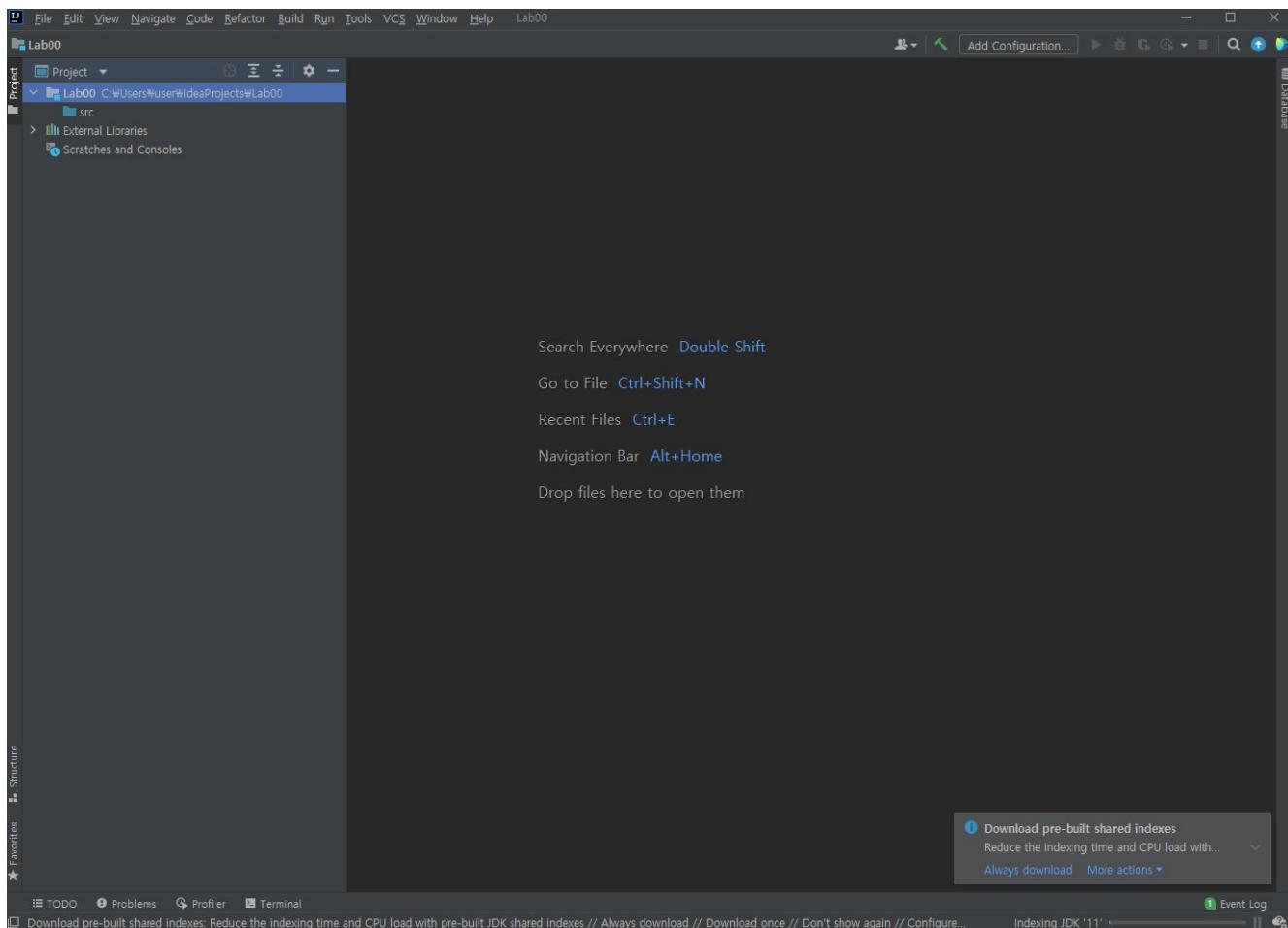
Create a New Project





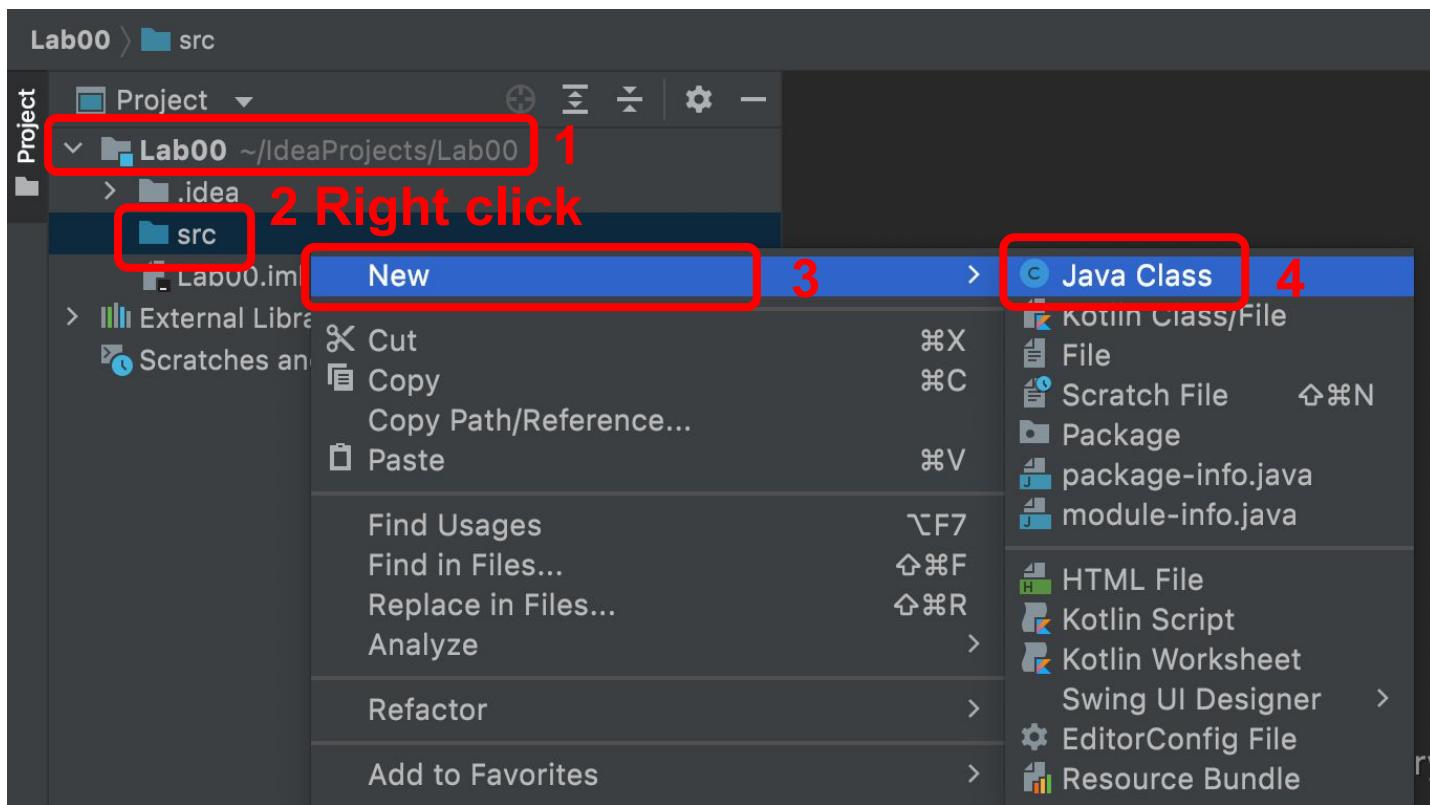
Create a New Project

- New project Lab00 is created



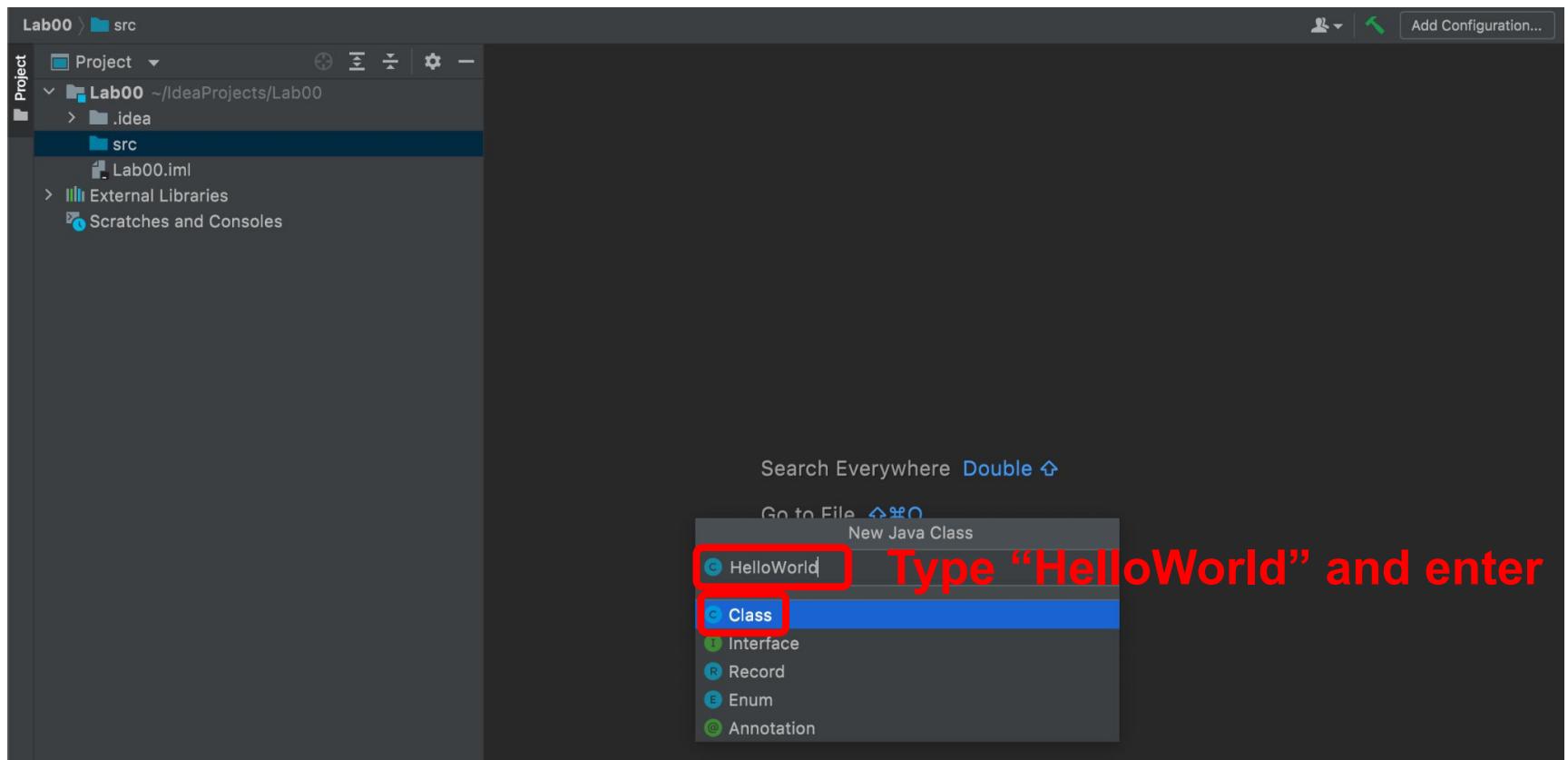
Create a Java Class File

- Create a new Java class file in “src” directory



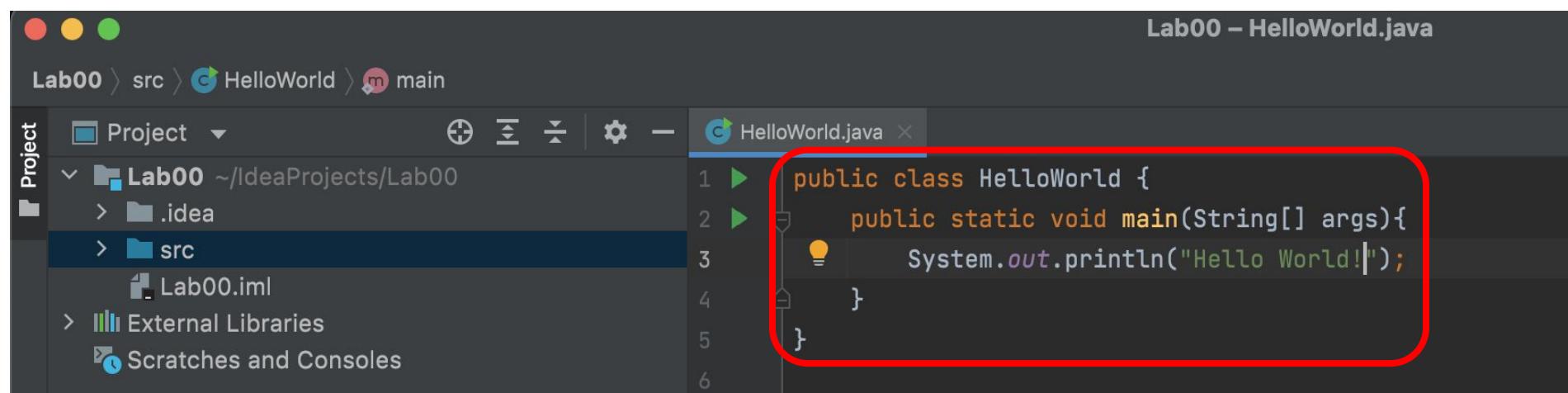
Create a Java Class File

- Create a new Java class “HelloWorld”



Write a Code

- Write a simple code which outputs “Hello World!”
(Don’t worry about what the code means for now)



The screenshot shows an IDE interface with the following details:

- Title Bar:** Lab00 – HelloWorld.java
- Project Tree:** Shows a project named "Lab00" with subfolders ".idea", "src", "Lab00.iml", "External Libraries", and "Scratches and Consoles". The "src" folder is selected.
- Code Editor:** A file named "HelloWorld.java" is open. The code contains the following Java code:

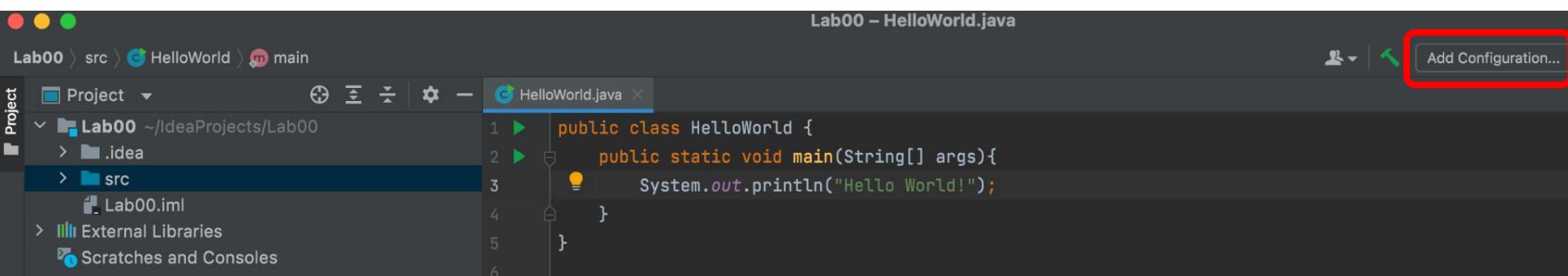
```
1 public class HelloWorld {  
2     public static void main(String[] args){  
3         System.out.println("Hello World!");  
4     }  
5 }  
6 }
```

The lines from 3 to 6 are highlighted with a red rounded rectangle.

Run Configuration

- Create a new configuration to run Java application

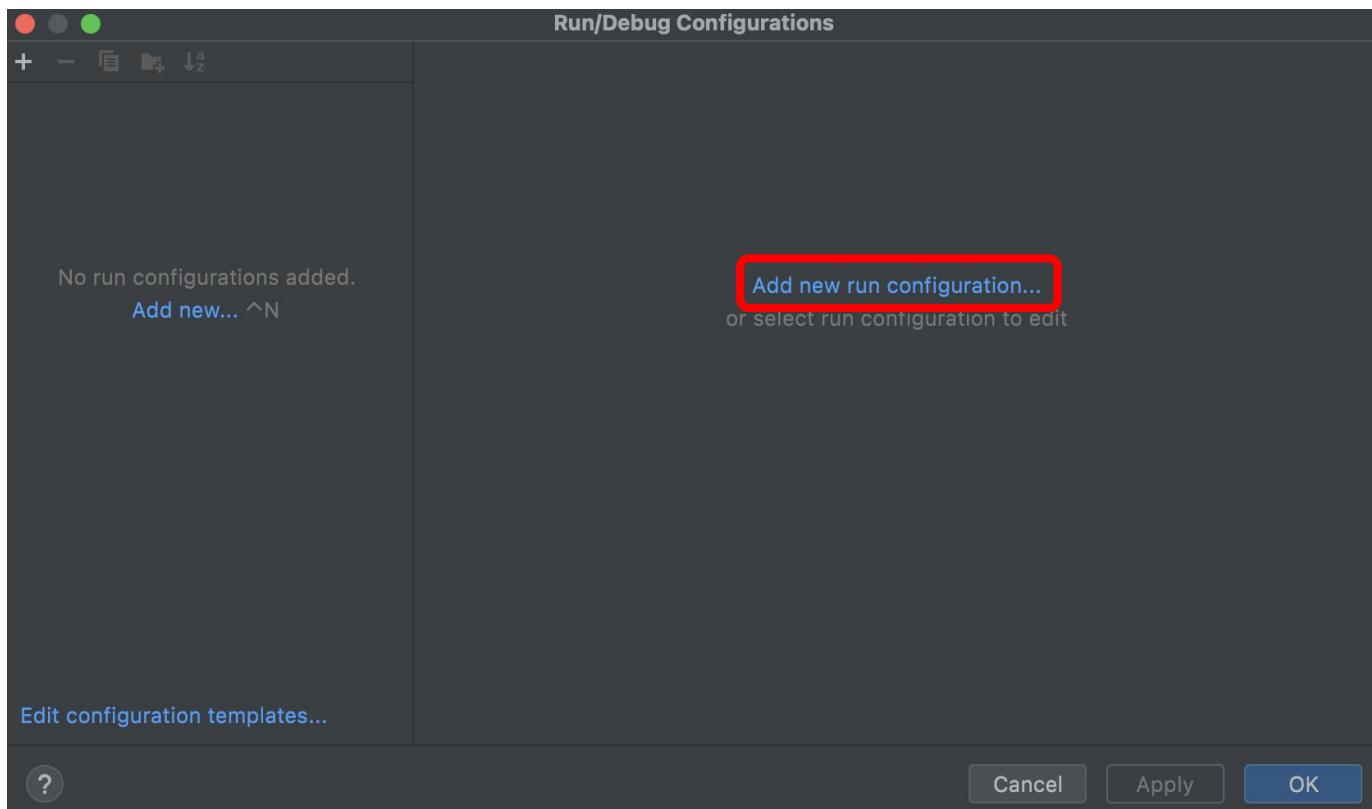
Click “Add Configuration...”





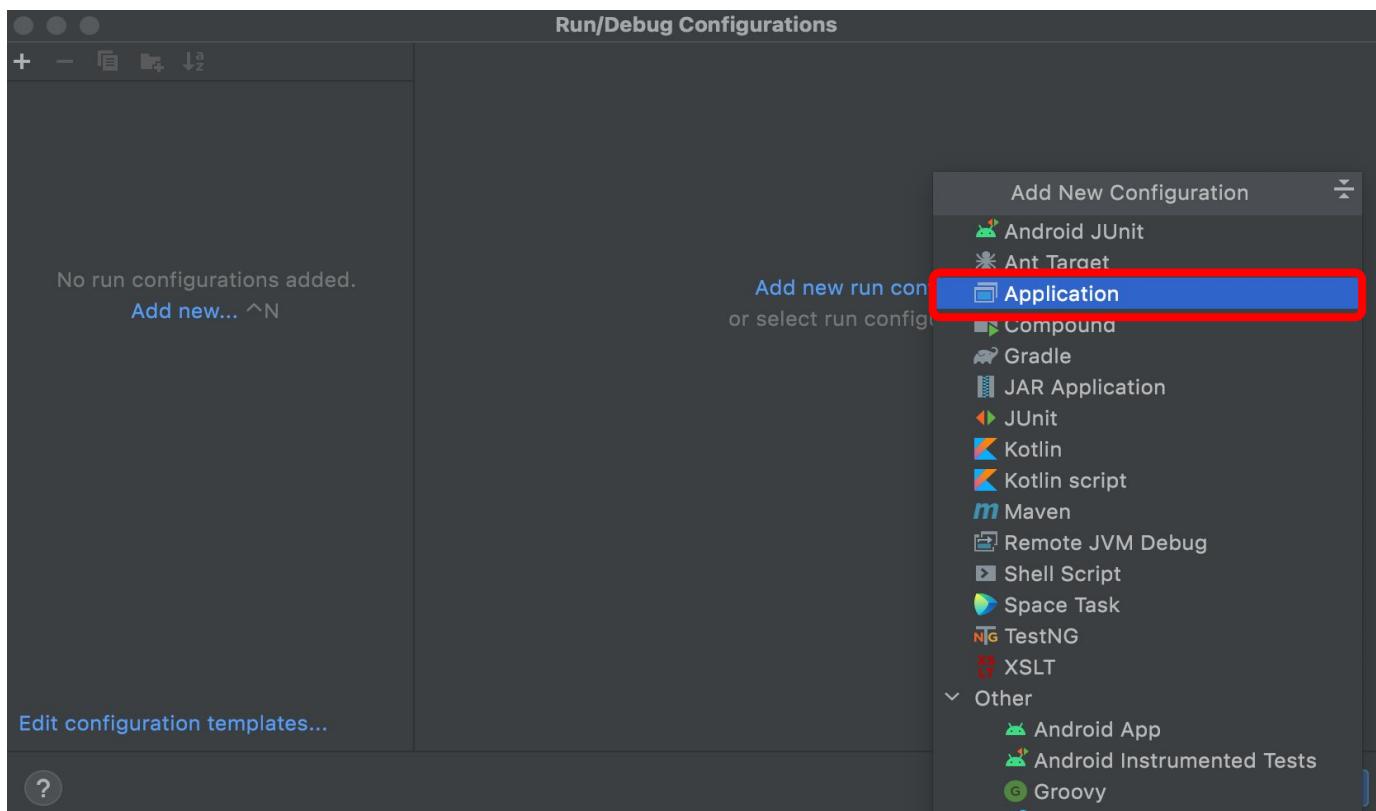
Run Configuration

- Click “Add new run configuration”



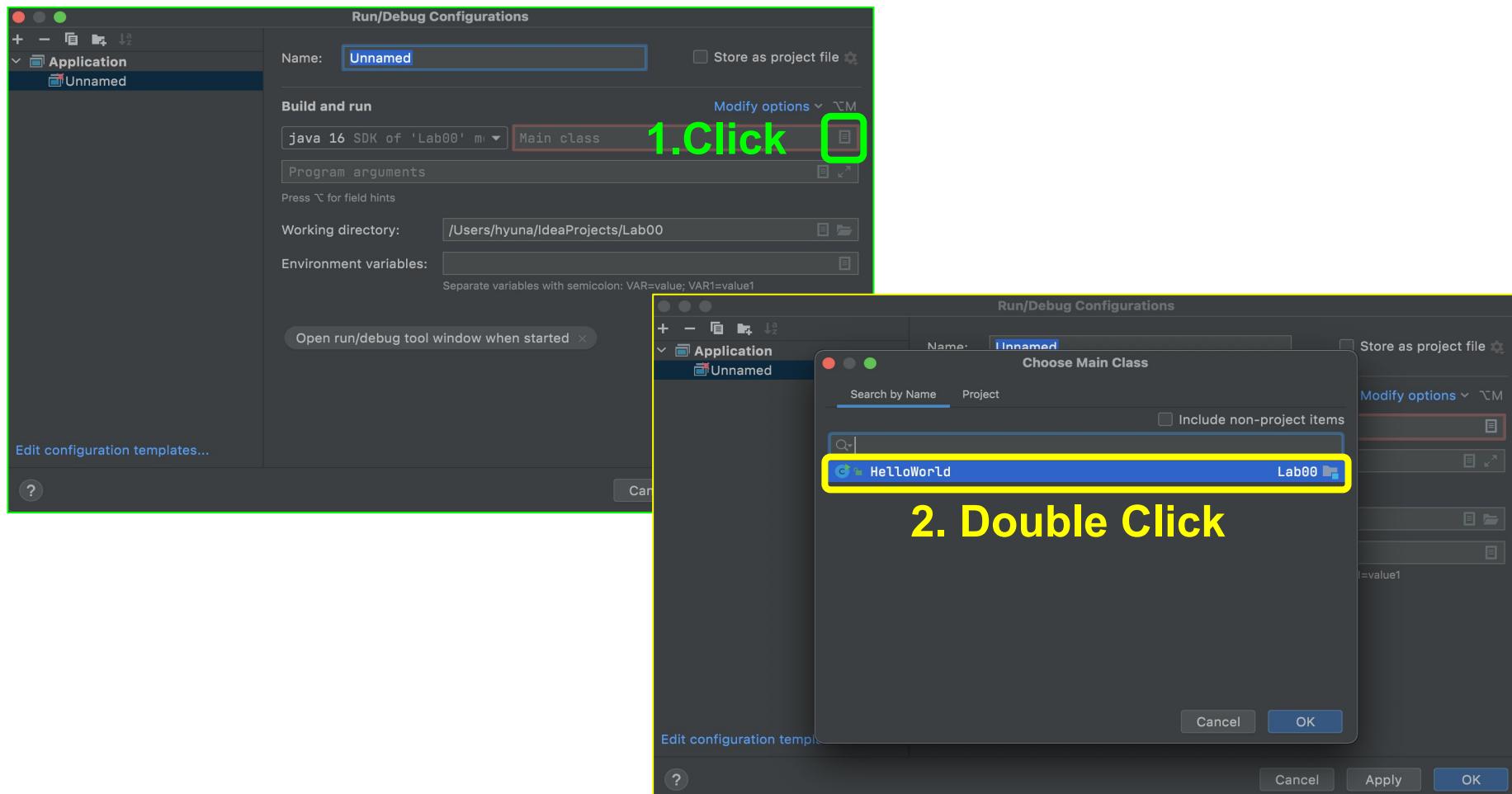
Run Configuration

- Create a new configuration to run Java application



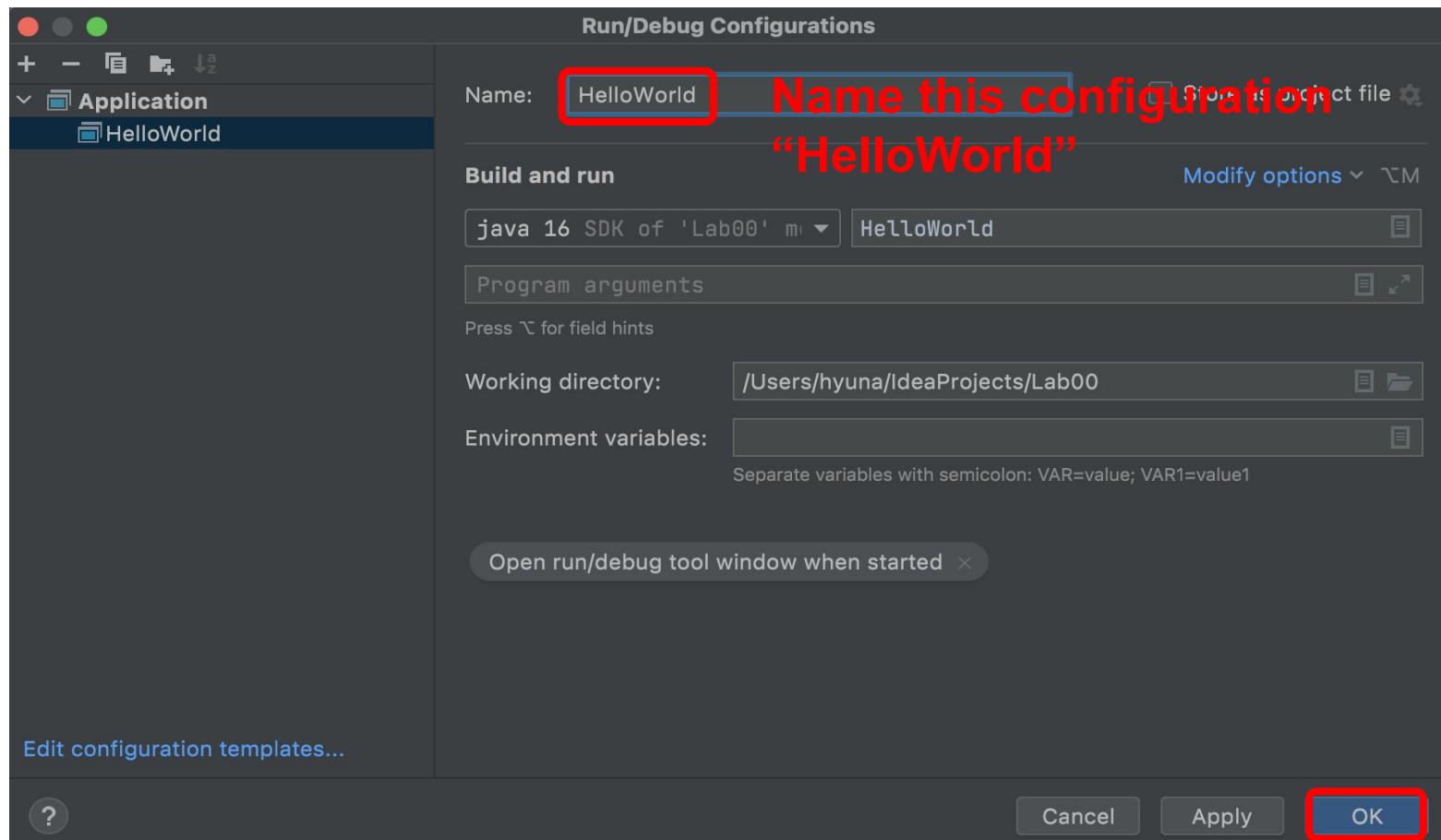
Choose the Main Class

- Choose which class to run



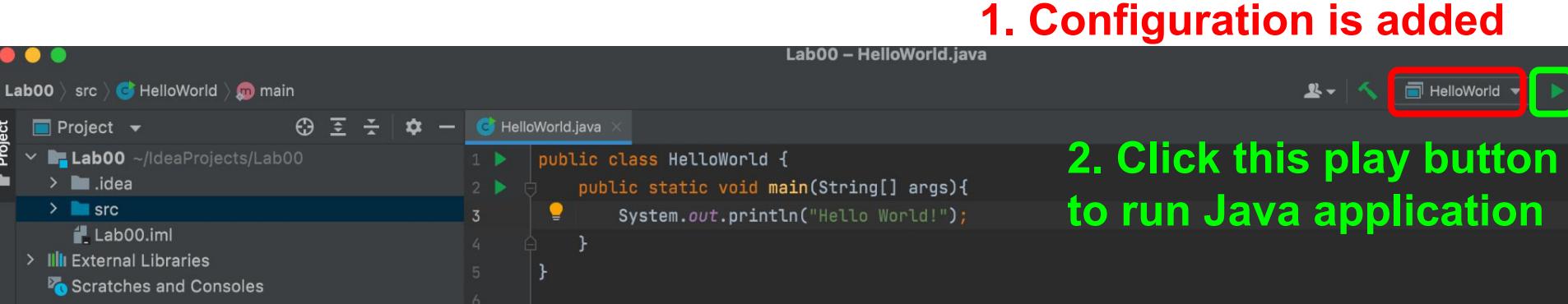


Run Configuration



Run Java Application

- Run Java application



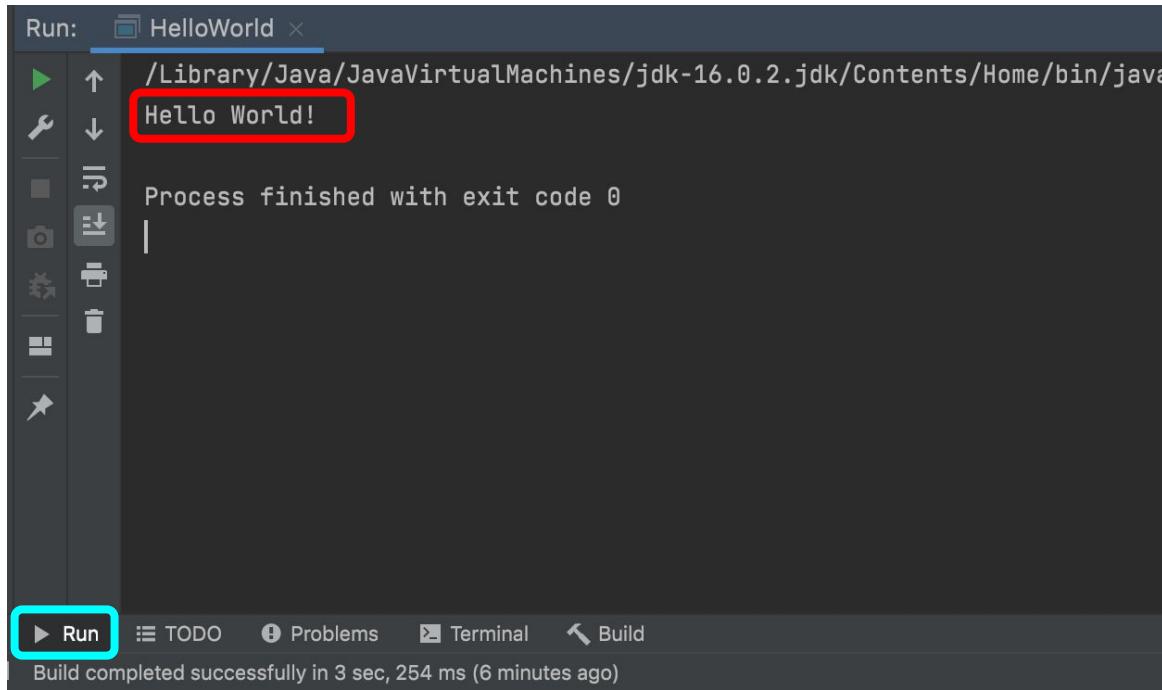
1. Configuration is added

2. Click this play button to run Java application

```
public class HelloWorld {  
    public static void main(String[] args){  
        System.out.println("Hello World!");  
    }  
}
```

Hello World!

- “Hello World!” is printed at the bottom of the screen



The screenshot shows a Java IDE's run console. The title bar says "Run: HelloWorld". The main area displays the command line output:

```
/Library/Java/JavaVirtualMachines/jdk-16.0.2.jdk/Contents/Home/bin/java
Hello World!
Process finished with exit code 0
```

The "Hello World!" line is highlighted with a red box. At the bottom of the window, there is a toolbar with several icons, and the "Run" button is highlighted with a blue box. Below the toolbar, a status message reads: "Build completed successfully in 3 sec, 254 ms (6 minutes ago)".

- If you can't see it, then click the “**Run**” button



The role of IntelliJ IDEA

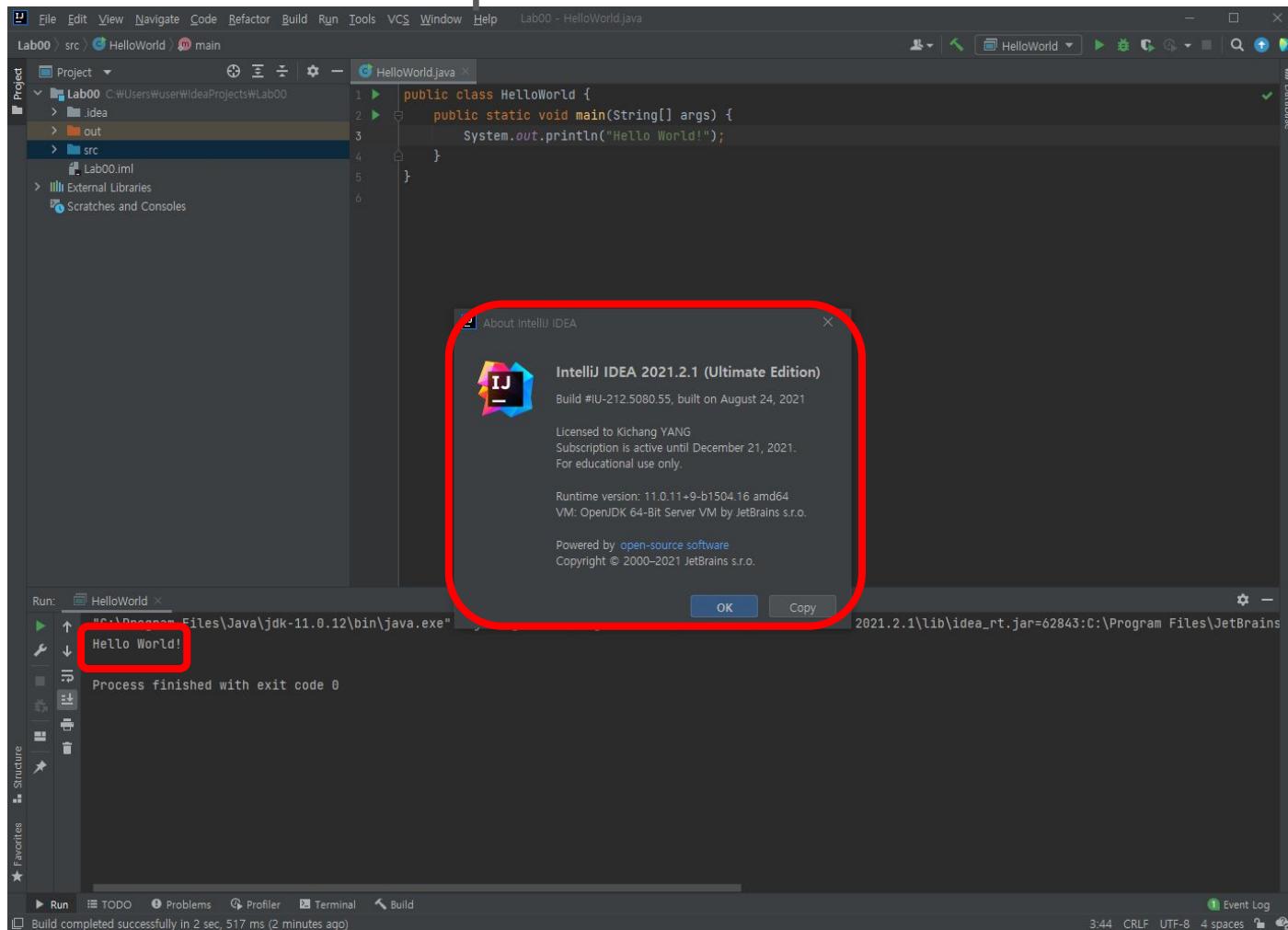
- IntelliJ IDEA automatically compile all “*.java” codes which are needed to run the main class (“HelloWorld” is main class in this project).
- IntelliJ IDEA automatically runs the main class (which have main() method)

Today's Lab Assignment

- Check IntelliJ IDEA installation
- Submit Screenshot ~ **Sep 15th 19:00PM (before next lab session)**, on eTL [1 Mark]
 - **with License**
 - Windows : Click [Help] - [About] in IntelliJ
 - macOS : Click [IntelliJ IDEA] - [About IntelliJ IDEA]
 - **with “Hello, world!” printed**

Today's Lab Assignment

- Screenshot example

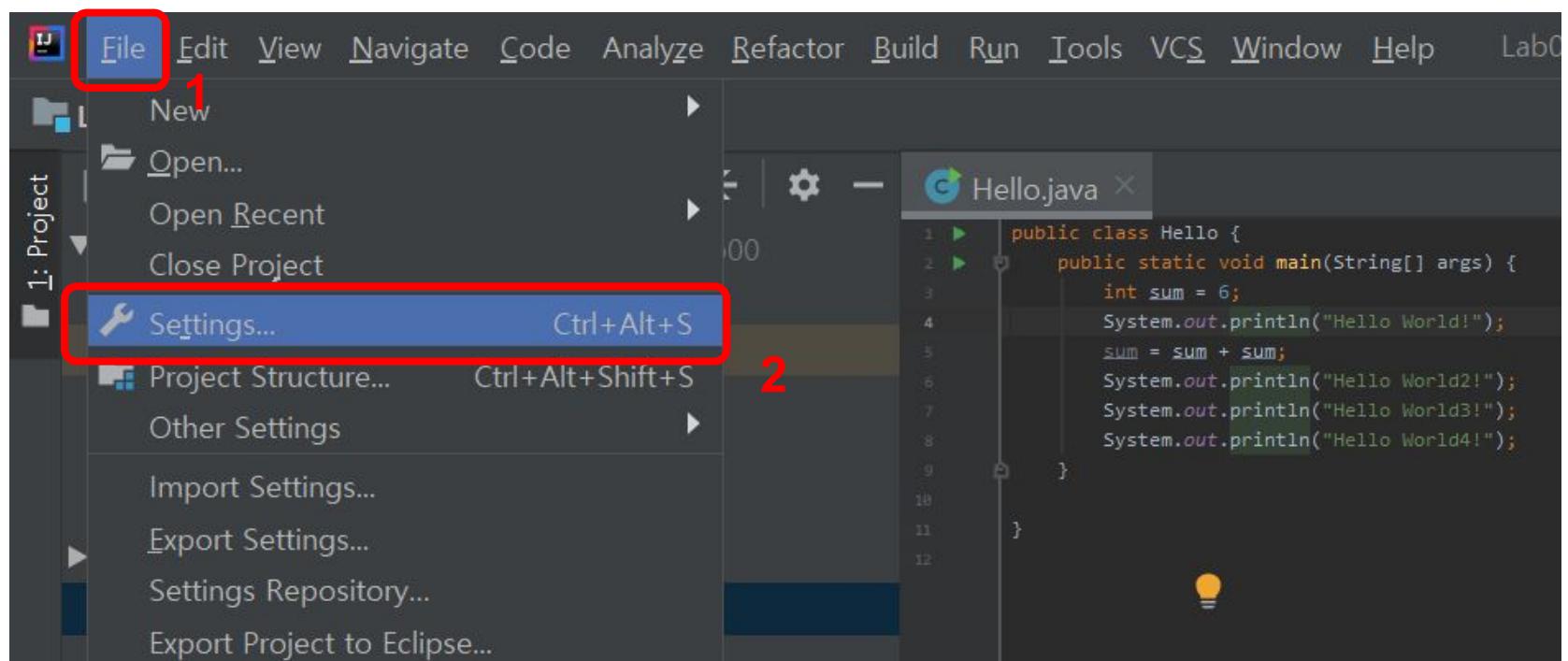


Additional features of IntelliJ IDEA

- Reason for using IDE 
 - Convenient developing environment for the developer
 - Comprehensive facilities assisting the software development
- We will introduce several specific and very useful built-in features of IntelliJ IDEA

IDE font size change

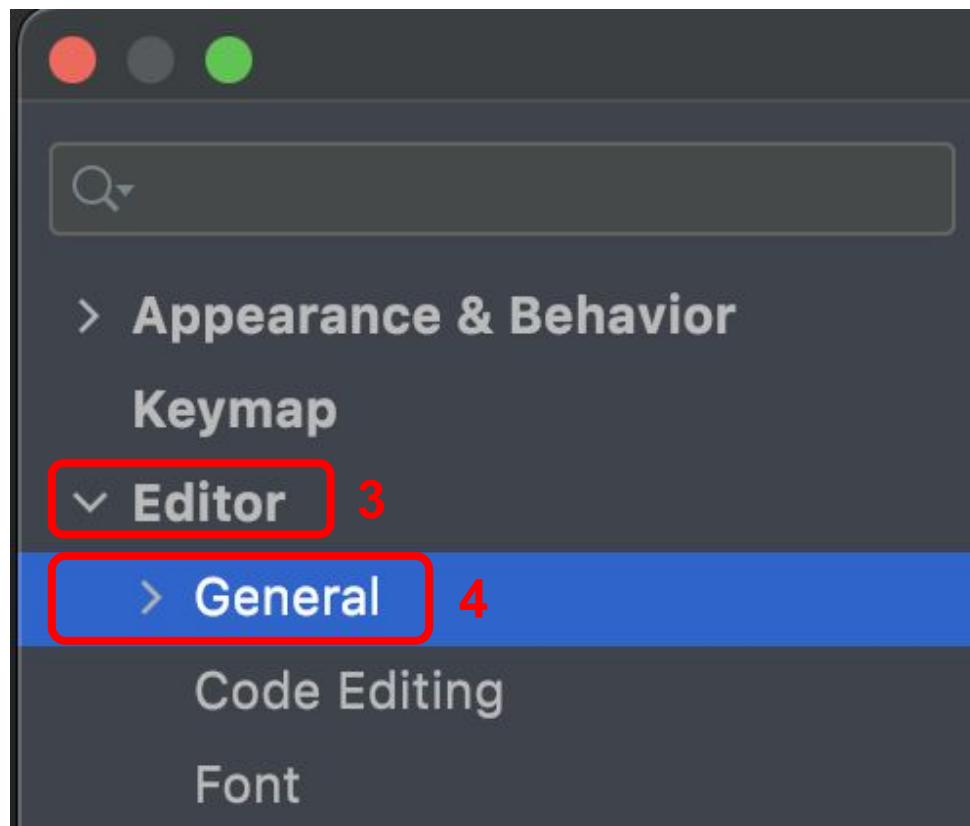
- Code font size may be too small / large to read
- On the top bar menu, tap [File] -> [Settings]



- [For macOS] Use **Command + ,**

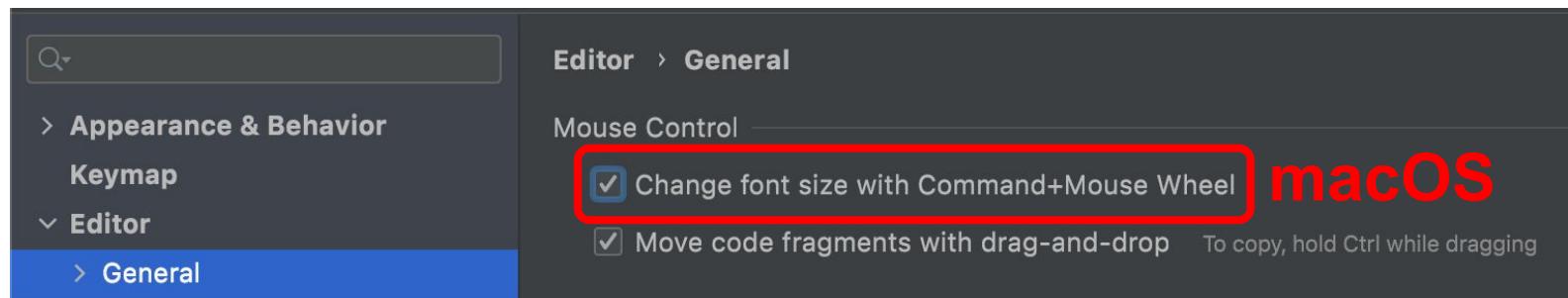
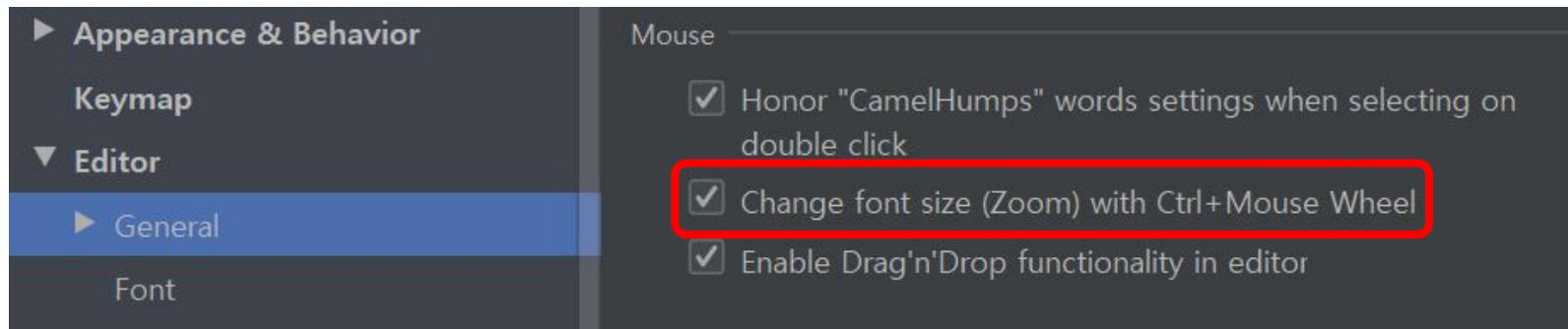
IDE font size change

- On the left bar, tap [Editor] -> [General]



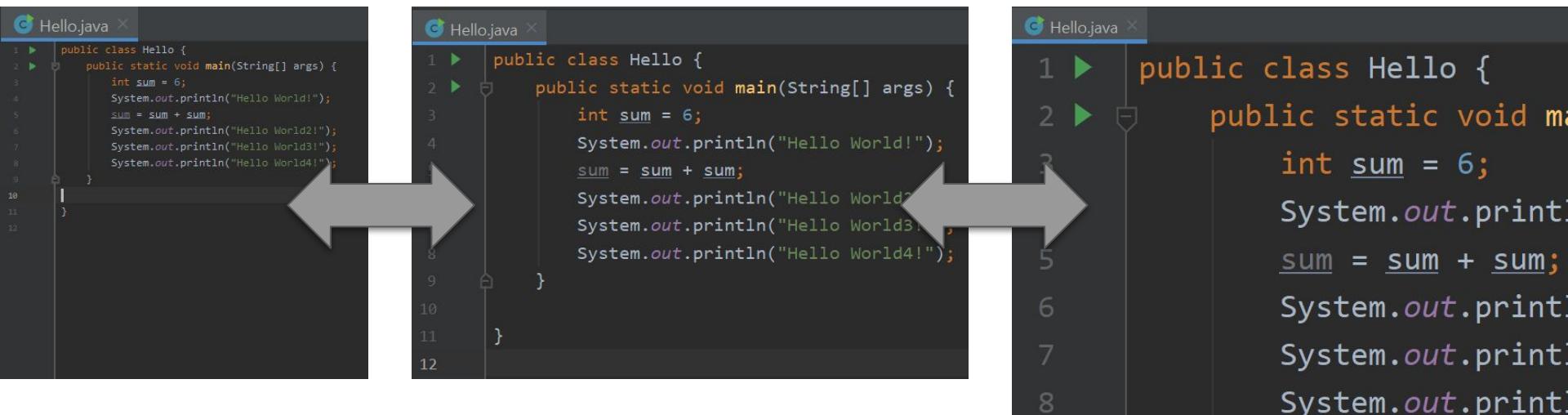
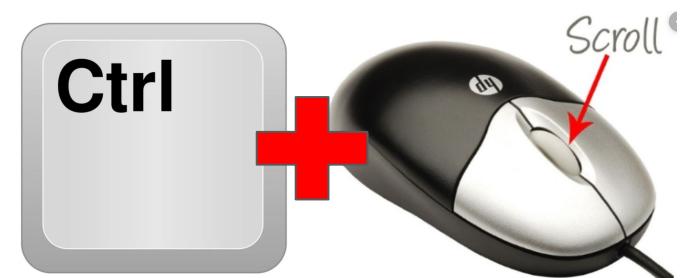
IDE font size change

- Check the box “Change font size(Zoom) with Ctrl + Mouse Wheel



IDE font size change

- Then font size is freely adjustable with
[Ctrl(Command) + Mouse Wheel]



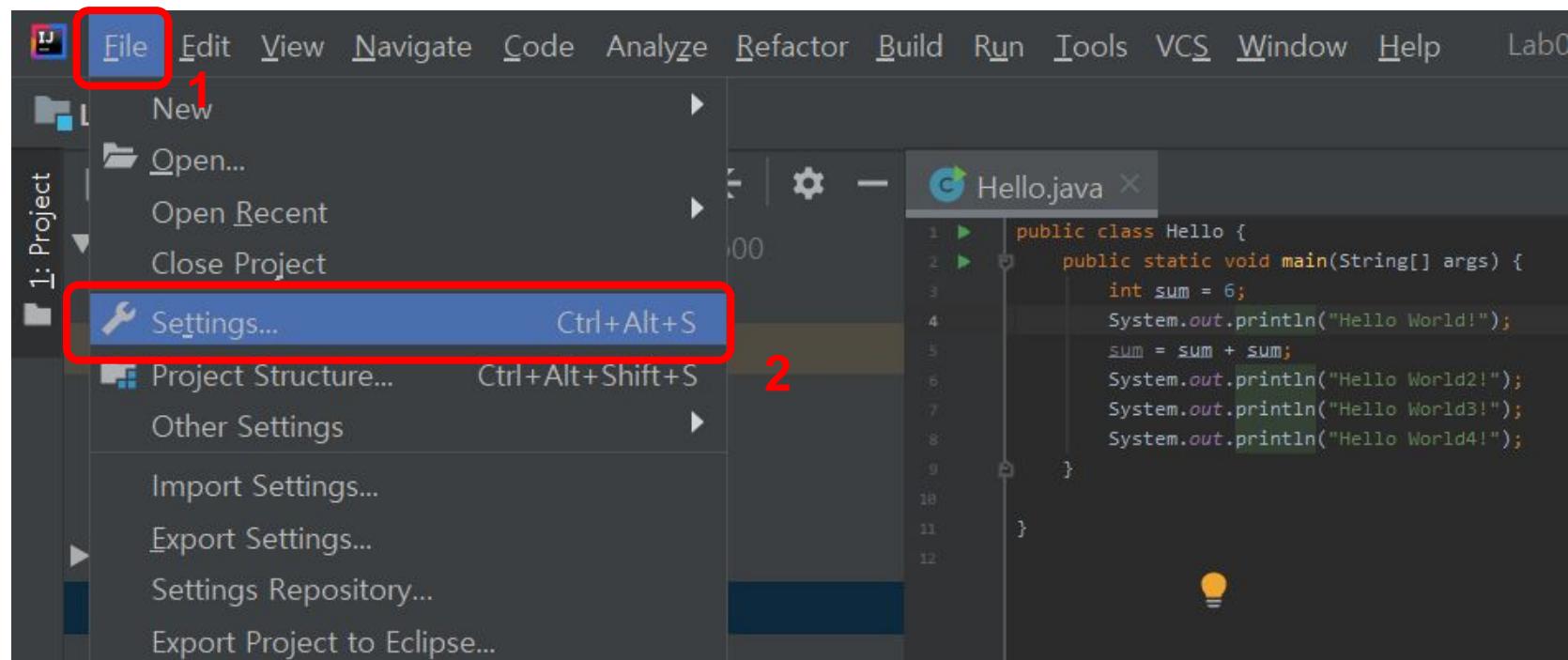
The image shows three sequential screenshots of a Java IDE window titled "Hello.java". Each screenshot displays the same Java code with increasing font sizes:

```
1 ► public class Hello {  
2 ►   public static void main(String[] args) {  
3     int sum = 6;  
4     System.out.println("Hello World!");  
5     sum = sum + sum;  
6     System.out.println("Hello World2!");  
7     System.out.println("Hello World3!");  
8     System.out.println("Hello World4!");  
9   }  
10 }  
11 }  
12 }
```

The font size increases from the first screenshot on the left to the third screenshot on the right, demonstrating the effect of using the keyboard and mouse scroll wheel to adjust the IDE's font size.

IDE theme change

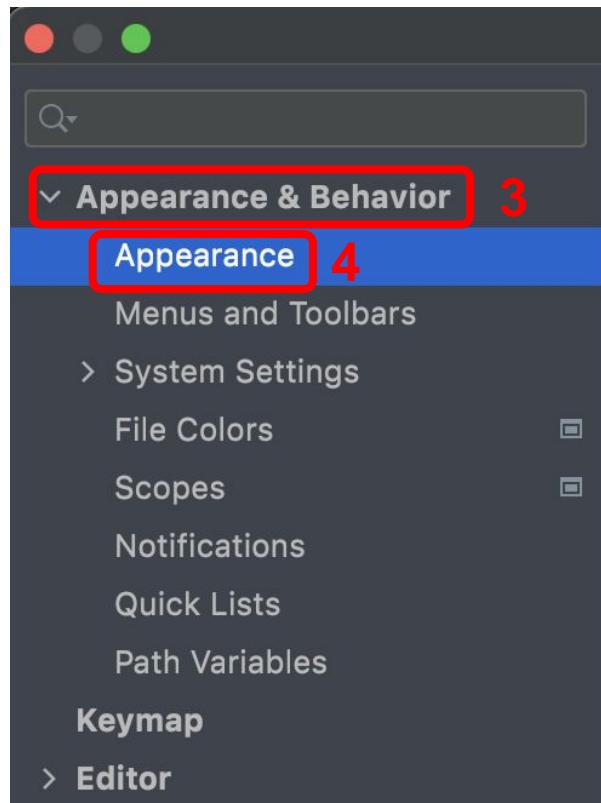
- IDE theme may not suit your taste
- On the top bar menu, tap [File] -> [Settings]



- [For macOS] Use **Command + ,**

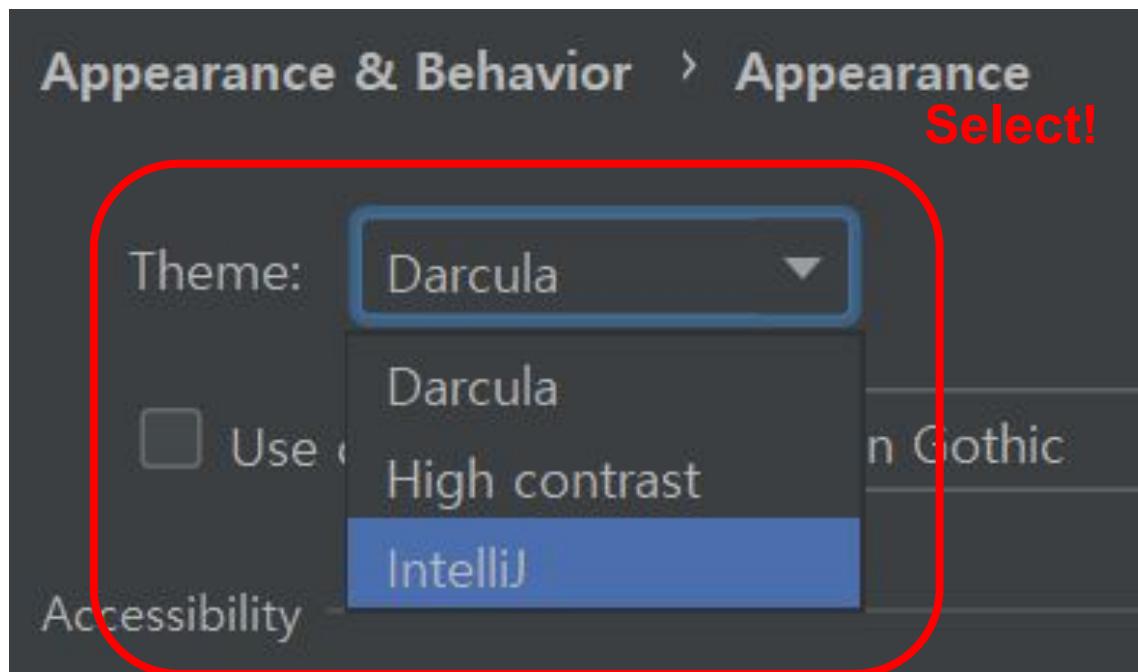
IDE theme change

- On the left bar, tap [Appearance] -> [Appearance]



IDE theme change

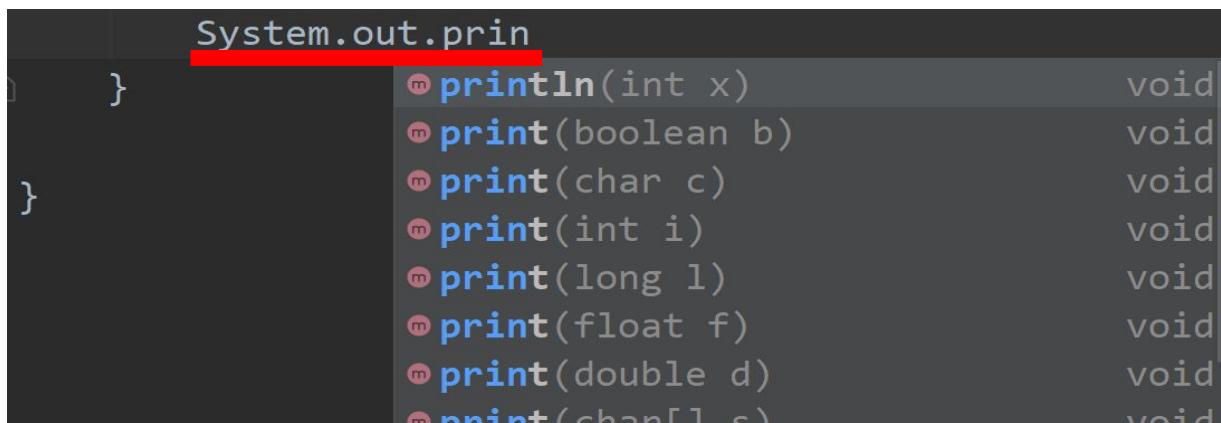
- Select the theme you want in a “Theme” drop bar
 - Dracula : Black , IntelliJ : White, High contrast : for colorblind people.
 - Custom themes are also available through plugins



Code Autocomplete

- Writing the exact name for the functionality every time is TOO cumbersome.
- When writing the code, **Autocomplete** the remaining part.

1. Only written part of the name



```
System.out.println
```

The screenshot shows a code editor with the following Java code:

```
System.out.println
```

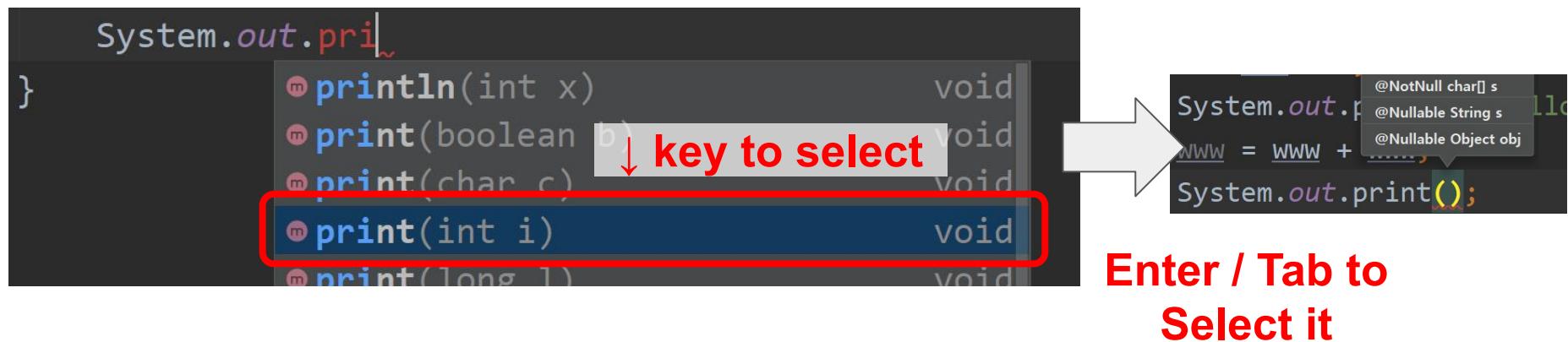
The word "print" is underlined with a red line, indicating it's the part of the method name that has been typed so far. A dropdown menu is open below the cursor, listing several methods from the `PrintWriter` class:

Method Name	Return Type
<code>m.println(int x)</code>	<code>void</code>
<code>m.print(boolean b)</code>	<code>void</code>
<code>m.print(char c)</code>	<code>void</code>
<code>m.print(int i)</code>	<code>void</code>
<code>m.print(long l)</code>	<code>void</code>
<code>m.print(float f)</code>	<code>void</code>
<code>m.print(double d)</code>	<code>void</code>
<code>m.print(char[] s)</code>	<code>void</code>

2. Suggests lots of possible names

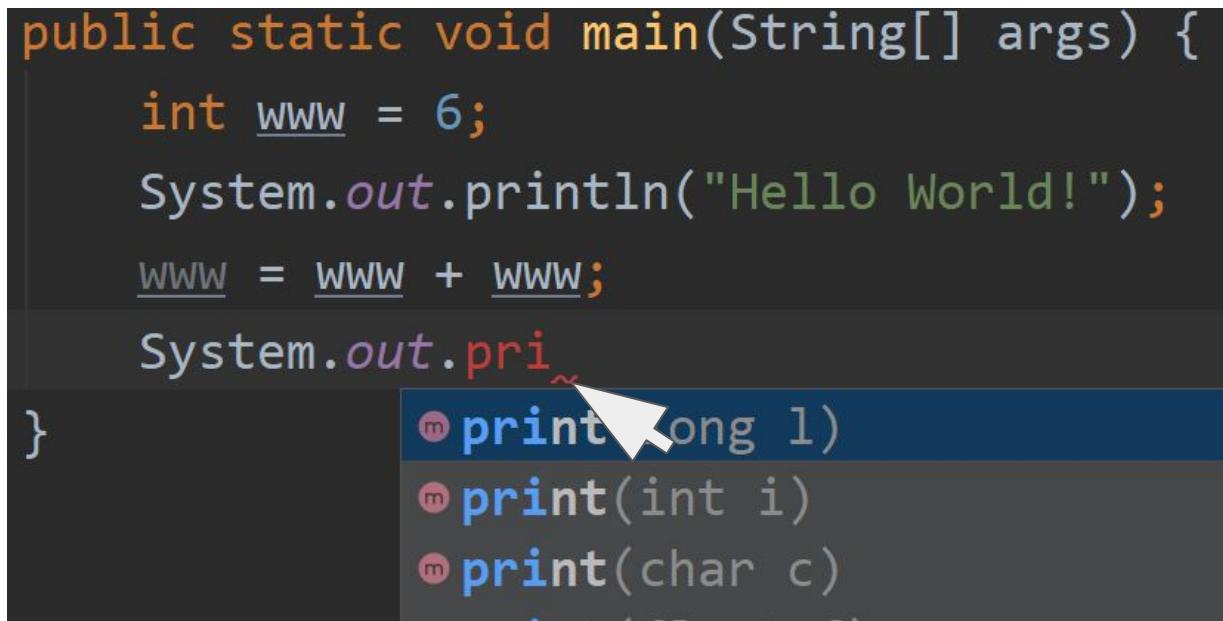
Code Autocomplete

- Choose the name on drop bar with arrow key.
- Press *Tab* or *Enter* to select it.



Code Autocomplete

- Use **Ctrl + space** to explicitly call the autocomplete dropdown.



A screenshot of a Java code editor showing the following code:

```
public static void main(String[] args) {
    int www = 6;
    System.out.println("Hello World!");
    www = www + www;
    System.out.pr_
```

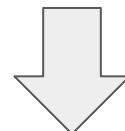
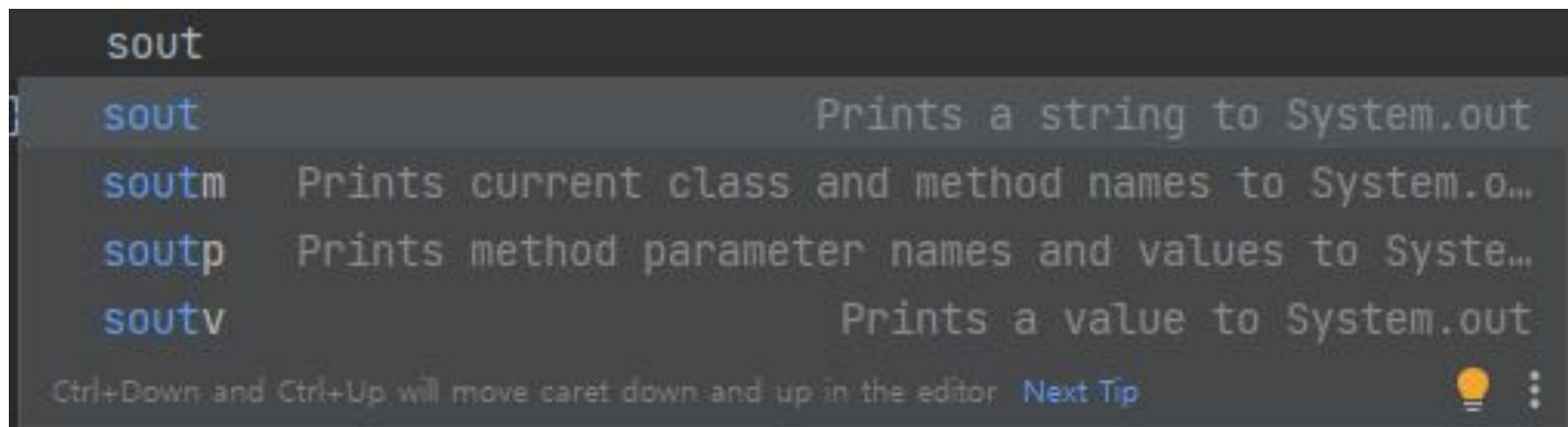
An autocomplete dropdown is displayed below the cursor at the end of `System.out.pr_`. The dropdown shows three suggestions:

- `print long l)`
- `print(int i)`
- `print(char c)`

A mouse cursor arrow points to the first suggestion, `print long l)`.

Code Autocomplete

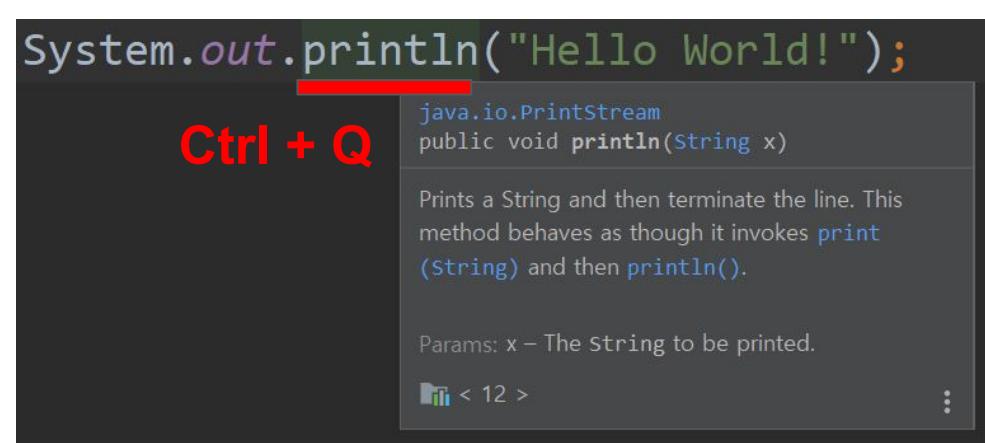
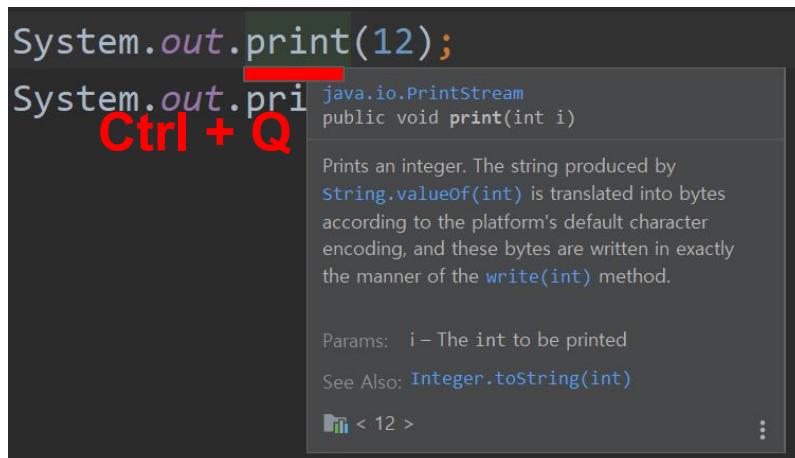
- Shortcut for “System.out.println()”
: Type “sout” and press TAB



```
System.out.println();
```

Quick Documentation search

- Use **Ctrl + Q** shows the Quick documentation of the function.
- [For macOS] Use **F1**





Name Refactoring

- When we need to change a variable or function's name, we don't have to change all the code it is used manually.

When you want to change String name *s* to *student*,

```
public static void main(String[] args) {  
    String s = "Hello World!";  
    System.out.println(s);  
    System.out.println(s + "1");  
    System.out.println(s + "2");  
    System.out.println(s + "3");  
    System.out.println(s + "4");  
    System.out.println(s + "5");  
    s = "It's over";  
    System.out.println(s + "1");  
}
```

**Modify All *s*
Manually?**

Name Refactoring

- Use **Shift + f6** on a name, and modify it to change all the same names used in the code.

**Shift + F6
and change
only this**

```
public static void main(String[] args) {  
    String studen = "Hello World!";  
    System.out.println(studen);  
    System.out.println(studen + "1");  
    System.out.println(studen + "2");  
    System.out.println(studen + "3");  
    System.out.println(studen + "4");  
    System.out.println(studen + "5");  
    studen = "It's over";  
    System.out.println(studen + "1");  
}
```

**Then all the
lines change
at once**

Java Language Syntax References

- We already suggested a **w3schools tutorial list** in last week's class.
- Please complete the tutorials we suggested **before next week's Lab.**

<https://www.w3schools.com/java/default.asp>

- It would be very useful to refer to whenever syntax is confusing!

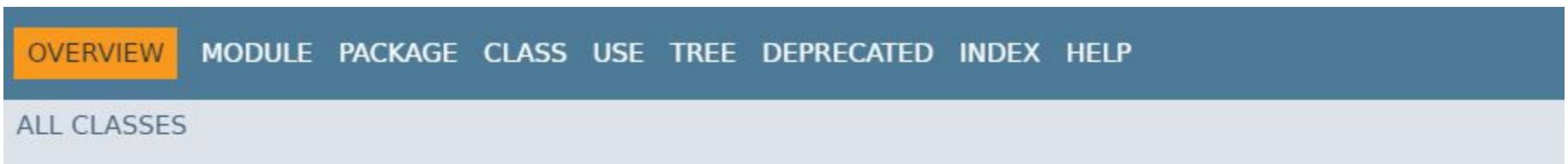


Java Language Syntax References

- The **full documentation** of Java is here,
<https://docs.oracle.com/en/java/javase/11/> but will not be helpful at all in a beginning stage.

Java Language Syntax References

- Or you could visit **API documentation** of previous version Java for more easier search of functionality.
 - <https://docs.oracle.com/en/java/javase/11/docs/api/>



The screenshot shows the top navigation bar of the Java API Documentation. The bar has a dark blue background with white text. The 'OVERVIEW' tab is highlighted with an orange background. Other tabs include 'MODULE', 'PACKAGE', 'CLASS', 'USE', 'TREE', 'DEPRECATED', 'INDEX', and 'HELP'. Below the navigation bar, there is a light gray sidebar with the text 'ALL CLASSES'.

**Java® Platform, Standard Edition & Java Development Kit
Version 11 API Specification**

Java Language Syntax References

- For example, if you want to search System.out.println



The screenshot shows the Java™ Platform, Standard Ed. 7 API Specification documentation. On the left, there's a sidebar with links for "All Classes", "Packages", and several package names: "java.applet", "java.awt", and "java.awt.color". The main content area has a navigation bar at the top with links: Overview (orange), Package, Class, Use, Tree, Deprecated, Index (which is highlighted with a red box), and Help. Below the navigation bar are links for "Prev", "Next", "Frames", and "No Frames". The main title "Java™ Platform, Standard Edition 7 API Specification" is displayed prominently. A large red "Click" button is overlaid on the right side of the page.

Java Language Syntax References

- For example, if you want to search System.out.println

OVERVIEW MODULE PACKAGE CLASS USE TREE DEPRECATED INDEX HELP

ALL CLASSES

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z _
All Classes All Packages

P Click

p - Variable in class javax.swing.text.html.parserDTD

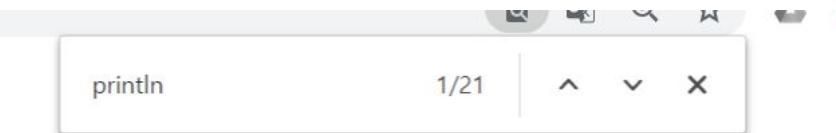
The element corresponding to p.

P - Static variable in class javax.swing.text.html.HTML.Tag

Tag <p>

Java Language Syntax References

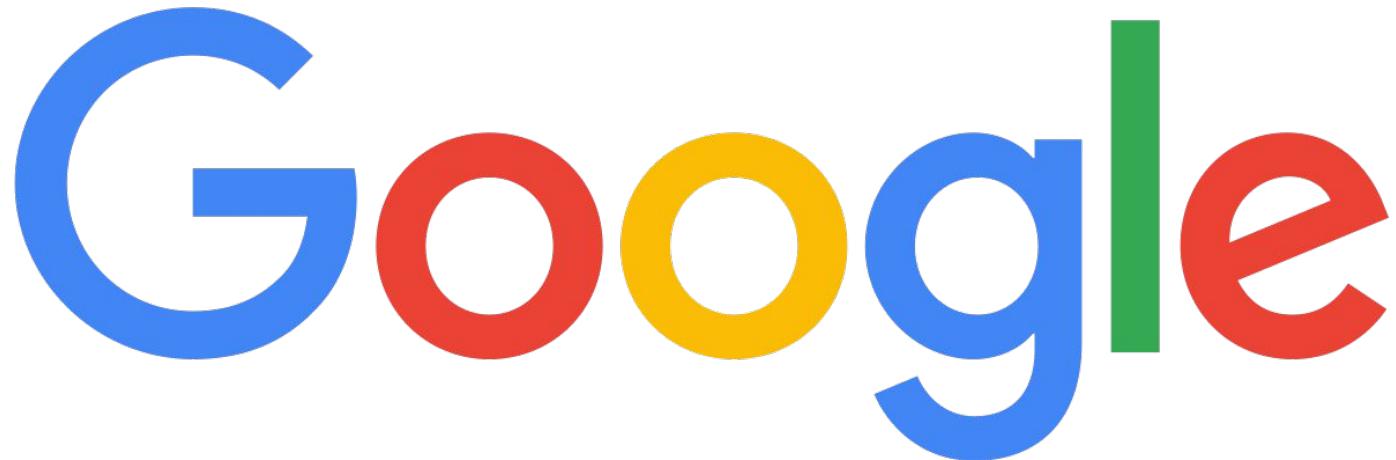
- For example, if you want to search System.out.println



**Ctrl + F and
Search**

- println()** - Method in class java.io.PrintStream
Terminates the current line by writing the line separator string to this stream.
- println()** - Method in class java.io.PrintWriter
Terminates the current line by writing the line separator string to this stream.
- println(boolean)** - Method in class java.io.PrintStream
Prints a boolean and then terminates the line separator string.
- println(boolean)** - Method in class java.io.PrintWriter
Prints a boolean value and then terminates the line separator string.

**Remember that
Google is always there for you!**



Today's Lab Assignment

- Check IntelliJ IDEA installation
- Submit Screenshot ~ **Sep 15th 19:00PM (before next lab session)**, on eTL [1 Mark]
 - **with License**
 - Windows : Click [Help] - [About] in IntelliJ
 - macOS : Click [IntelliJ IDEA] - [About IntelliJ IDEA]
 - **with “Hello, world!” printed**



Thank You!
Any Questions?