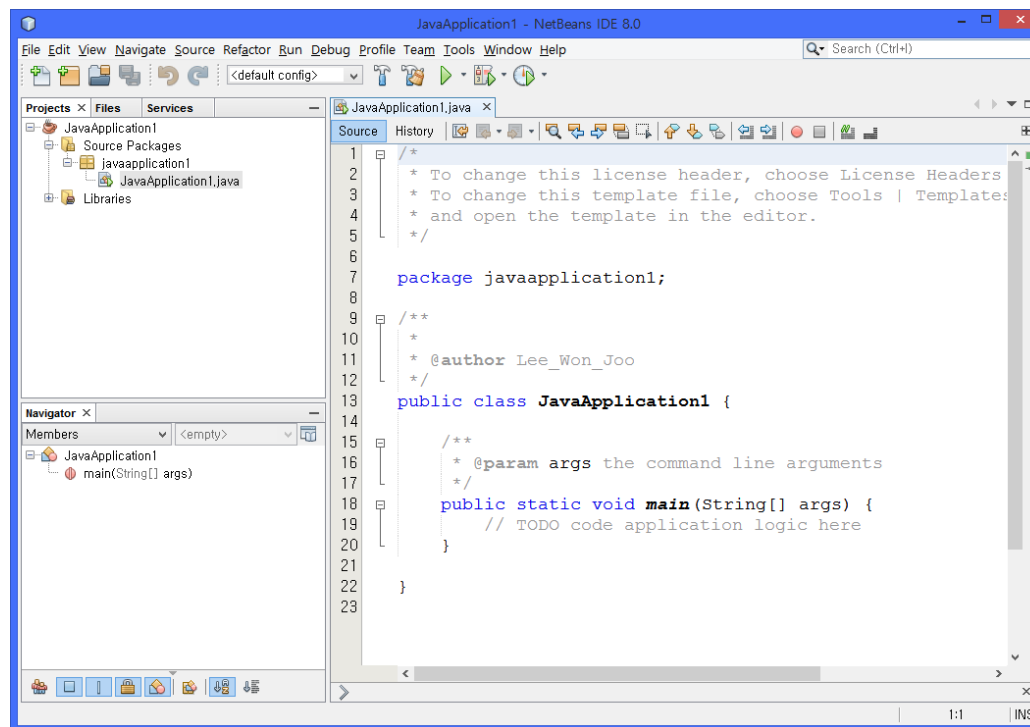




# Java Windows Application 개발 환경





# 학습 목표

## ■ 교육 목표

- ❖ Java 프로그램 개발 도구
- ❖ JDK(Java Development Kit) 설치
- ❖ NetBeans 설치





# Java 프로그램 개발 도구

## Java 프로그램 개발 도구 종류

❖ JDK (Java Development Kit)

❖ 통합개발환경

◆ Eclipse, NetBeans, Jbuilder, Visual J++

❖ Download

도구	File	Download URL
JDK	jdk-17_windows-x64_bin.exe	<a href="https://www.oracle.com/java/technologies/downloads/#jdk17-windows">https://www.oracle.com/java/technologies/downloads/#jdk17-windows</a>
NetBeans	Apache-NetBeans-12.4-bin-windows-x64.exe	<a href="https://netbeans.apache.org/download/">https://netbeans.apache.org/download/</a>
NetBeans with JDK	jdk-8u141-nb-8_2-windows-x64.exe	<a href="https://drive.google.com/drive/folders/1fyppVCOEWiVi8EXB3iX9isZKcG_se3-Z?usp=sharing">https://drive.google.com/drive/folders/1fyppVCOEWiVi8EXB3iX9isZKcG_se3-Z?usp=sharing</a>





# JDK 설치 (1)

## JDK 다운로드

The screenshot shows the Oracle Software Download page. A yellow box with the text "1. https://www.oracle.com/downloads/" has a red arrow pointing to the address bar. Another yellow box with the text "2. Click" has a red arrow pointing to the "Java" link in the "Developer Downloads" section. The "Java" link is highlighted with a red rectangle.

Software Download | Oracle

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

ORACLE Products Industries Resources

If you already have a commercial license, download your software here.

Download software

Build, test, and deploy applications on Oracle Cloud—for free.

Try for free

Search our knowledge base and engage communities to learn.

Login to support

### Developer Downloads

All software downloads are free, and most come with a [Developer License](#) that allows you to use full versions of the products at no charge while developing and prototyping your applications, or for strictly self-educational purposes. (Unless otherwise specified, our technical support organization will not provide technical support, phone support, or updates to you for the programs licensed under this agreement.) You can buy products with full-use licenses at any time from the online Store or from your sales representative.

Contact Sales

- Database
- Middleware
- Applications
- IT Infrastructure
- Java**
- Developer Tools
- Drivers and Utilities
- Open Source

Audit Vault and Database Firewall

Berkeley DB

Database Express Edition

Database Mobile Server

NoSQL Database

Oracle Blockchain Platform

Secure Backup Cloud Module for Amazon S3



# JDK 설치 (2)

Software Download | Oracle

https://www.oracle.com/downloads/#category-java

ORACLE Products Industries Resources Customers Partners Developers Events View Accounts Contact Sales

## Java

Event Processing for Java Embedded	Java Embedded Suite	Java ME	Java Runtime Environment (JRE)
Java Card	Java (JRE) for Consumers	Java ME Embedded	Java SE
Java EE & GlassFish Server	<b>Java (JDK) for Developers</b>	Java ME Embedded Client	Java SE Embedded
	Java for Mobile	Java ME SDK	Java TV

**3. Click**

## Developer Tools

ADF Faces	Developer Tools for Visual Studio	Oracle REST Data Services (ORDS)	VM: Oracle VM Templates
Application Express (APEX)	Enterprise Pack for Eclipse	SOA Suite	VM: Pre-Built VirtualBox VMs
BI Publisher	Forms & Reports Services	Spatial Studio	Warehouse Builder
BPEL Process Manager	JavaScript Extension Toolkit	SQL Developer	WebRTC Session Controller Client SDK
Developer Studio	JDeveloper & ADF	SQL Developer Data Modeler	
Developer Suite 10g	NetBeans IDE	StorageTek	

## Drivers and Utilities

Cluster Verification Utility	JDBC Drivers	Oracle Cloud Infrastructure File Storage Service Client Utility	Oracle Data Access Components for Windows/ODBC/OCI/DB
------------------------------	--------------	---	---





# JDK 설치 (3)

Java Downloads | Oracle

https://www.oracle.com/java/technologies/downloads/#jdk18-windows

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Java downloads Tools and resources Java archive

## Java 18 and Java 17 available now

Java 17 LTS is the latest long-term support release for the Java SE platform. JDK 18 and JDK 17 binaries are free to use in production and free to redistribute, at no cost, under the Oracle No-Fee Terms and Conditions.

Learn about Java SE Subscription

JDK 18 will receive updates under these terms, until September 2022 when it will be superseded by JDK 19

JDK 17 will receive updates under these terms, until at least September 2024.

**Java 18** Java 17

### Java SE Development Kit 18.0.2 downloads

Thank you for downloading this release of the Java™ Platform, Standard Edition Development Kit (JDK™). The JDK is a development environment for building applications and components using the Java programming language.

The JDK includes tools for developing Java programming language and running on the Java platform.

Linux macOS **Windows**

## 4. Click

Product/file description	File size	Download
x64 Compressed Archive	172.79 MB	<a href="https://download.oracle.com/java/18/latest/jdk-18_windows-x64_bin.zip">https://download.oracle.com/java/18/latest/jdk-18_windows-x64_bin.zip</a> (sha256)
x64 Installer	153.37 MB	<a href="https://download.oracle.com/java/18/latest/jdk-18_windows-x64_bin.exe">https://download.oracle.com/java/18/latest/jdk-18_windows-x64_bin.exe</a> (sha256)
x64 MSI Installer	152.25 MB	<a href="https://download.oracle.com/java/18/latest/jdk-18_windows-x64_bin.msi">https://download.oracle.com/java/18/latest/jdk-18_windows-x64_bin.msi</a> (sha256)

## 5. Click



# JDK 설치 (4)

## JDK 실행

File Explorer window showing the path: 내 PC > INHA (D:) > [LECTURE] > Java\_프로그래밍 > Tool

Left sidebar shows the folder structure:

- Java\_프로그래밍
  - 2020\_과제
  - 2021\_과제
  - DJCHS\_Java\_특강
  - Example
  - Java\_API
  - Reference
  - SCJP
  - Tool**
    - 2012\_Express
    - AccessDatabaseEngine2016
    - ADFX
    - Oracle10g\_XE

Main pane shows the contents of the Tool folder:

이름	수정한 날짜	유형	크기
Oracle18c_XE	2021-11-16 오후 10:20	파일 폴더	
Oracle21c_XE	2021-11-16 오후 6:46	파일 폴더	
sqldeveloper-17.3.1.279.0537-no-jre	2019-09-13 오후 1:23	파일 폴더	
AccessDatabaseEngine.exe	2015-11-10 오전 1:17	응용 프로그램	25,933KB
AccessDatabaseEngine_x64.exe	2015-11-10 오전 1:17	응용 프로그램	27,961KB
AccessDatabaseEngine_x64.zip	2020-11-09 오전 10:02	압축(ZIP) 폴더	53,547KB
Automobile.mdb	2017-11-19 오전 11:08	Microsoft Access Database	284KB
Automobile64.accdb	2017-11-19 오후 1:11	Microsoft Access Database	416KB
jdk-7u80-windows-i586.exe	2020-11-09 오전 12:58	응용 프로그램	141,671KB
jdk-7u80-windows-x64.exe	2020-11-09 오전 12:55	응용 프로그램	143,451KB
jdk-8u141-nb-8_2-windows-i586.exe	2017-08-27 오후 10:42	응용 프로그램	326,603KB
jdk-8u141-nb-8_2-windows-x64.exe	2017-08-27 오후 10:16	응용 프로그램	337,069KB
<b>jdk-18_windows-x64_bin.exe</b>	<b>2022-08-08 오전 9:40</b>	<b>응용 프로그램</b>	<b>157,048KB</b>
netbeans-8.2-windows.exe	2018-08-26 오전 10:56	응용 프로그램	225,472KB
sqldeveloper-17.3.1.279.0537-no-jre.zip	2017-11-27 오후 8:57	압축(ZIP) 폴더	365,660KB
WINDOWS.X64_213000_db_home.zip	2021-11-16 오후 9:47	압축(ZIP) 폴더	2,599,398KB

A yellow box with the text "6. Double Click" and a red arrow pointing to the file **jdk-18\_windows-x64\_bin.exe**.

23개 항목





# JDK 설치 (5)

## JDK 설치

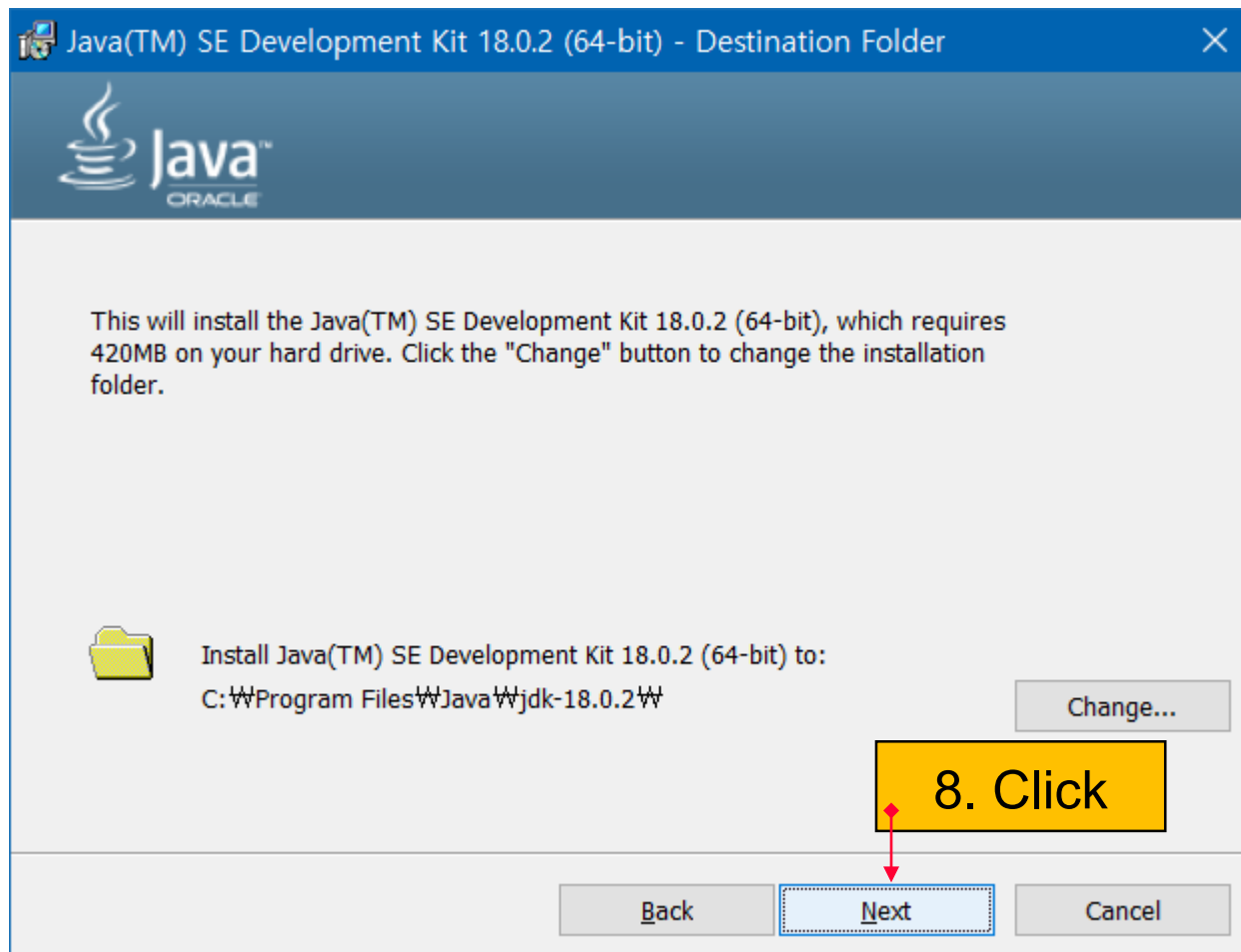






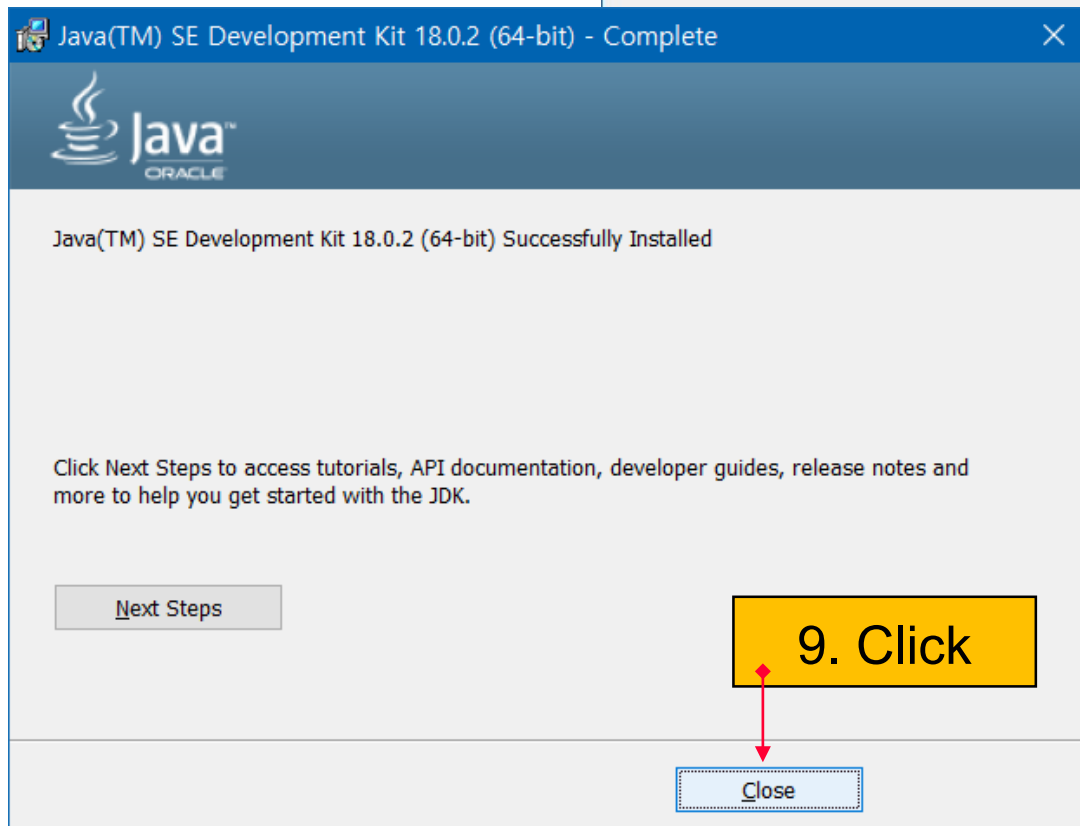
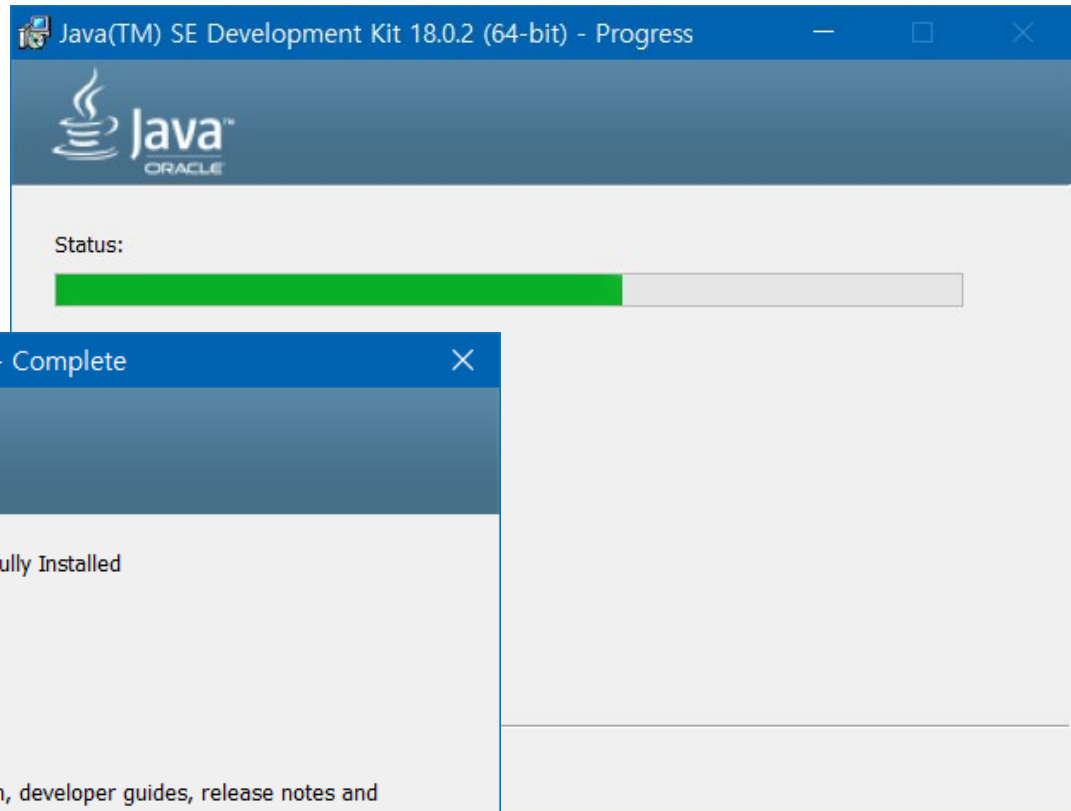
# JDK 설치 (6)

## ■ 설치 폴더 지정





# JDK 설치 (7)





# JDK 설치 (8)

## JDK 구조

File Explorer window showing the directory structure of JDK 18.0.2. The path is Program Files > Java > jdk-18.0.2. The left sidebar shows the tree view with 'jdk-18.0.2' expanded. The main pane shows a list of files and folders.

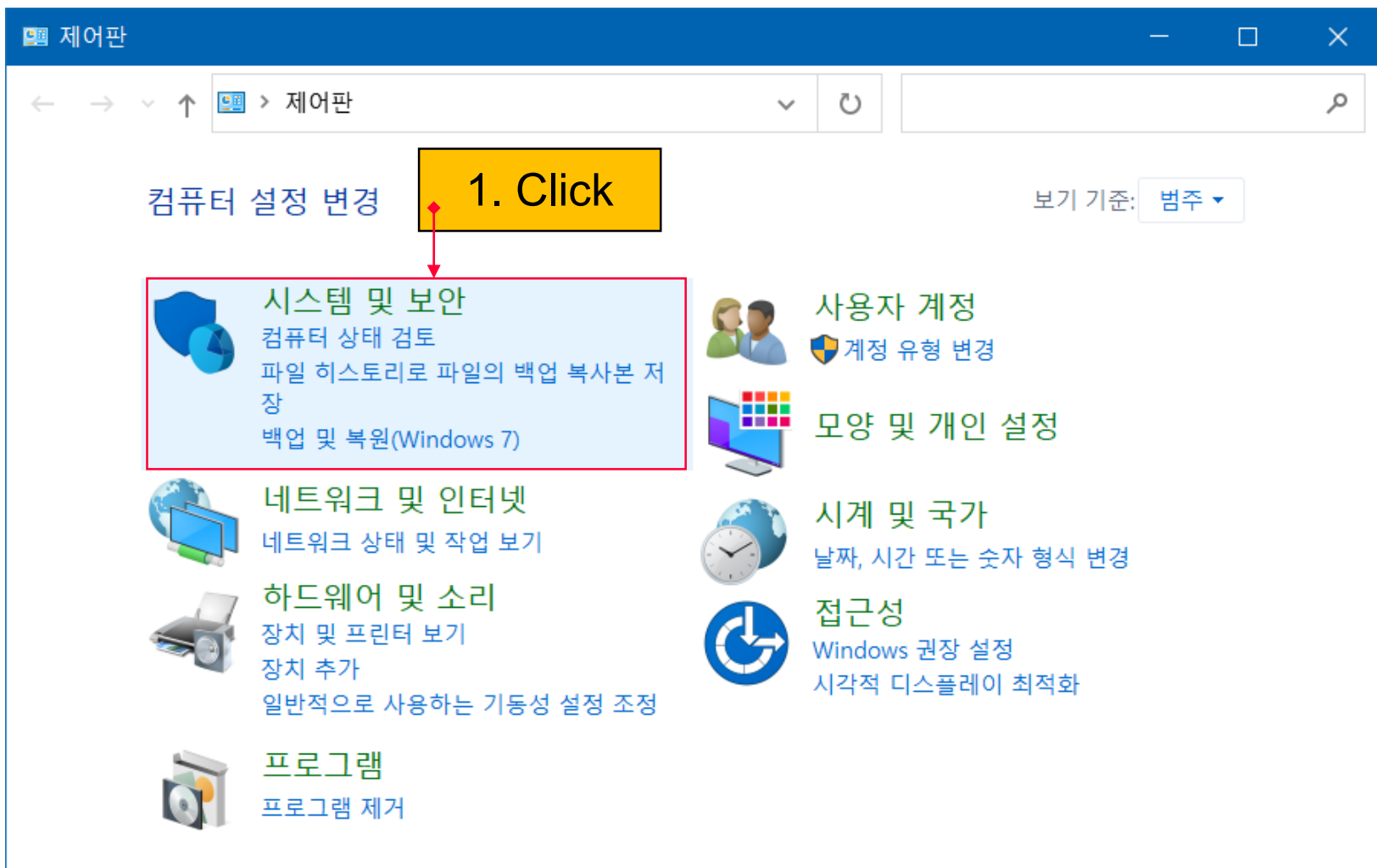
이름	수정한 날짜	유형	크기
bin	2022-08-08 오전 9:54	파일 폴더	
conf	2022-08-08 오전 9:54	파일 폴더	
include	2022-08-08 오전 9:54	파일 폴더	
jmods	2022-08-08 오전 9:54	파일 폴더	
legal	2022-08-08 오전 9:54	파일 폴더	
lib	2022-08-08 오전 9:54	파일 폴더	
COPYRIGHT	2022-06-07 오후 12:24	파일	4KB
LICENSE	2022-08-08 오전 9:54	파일	7KB
README	2022-08-08 오전 9:54	파일	1KB
release		파일	2KB

12. JDK 구조



# JDK 환경 설정 (1)

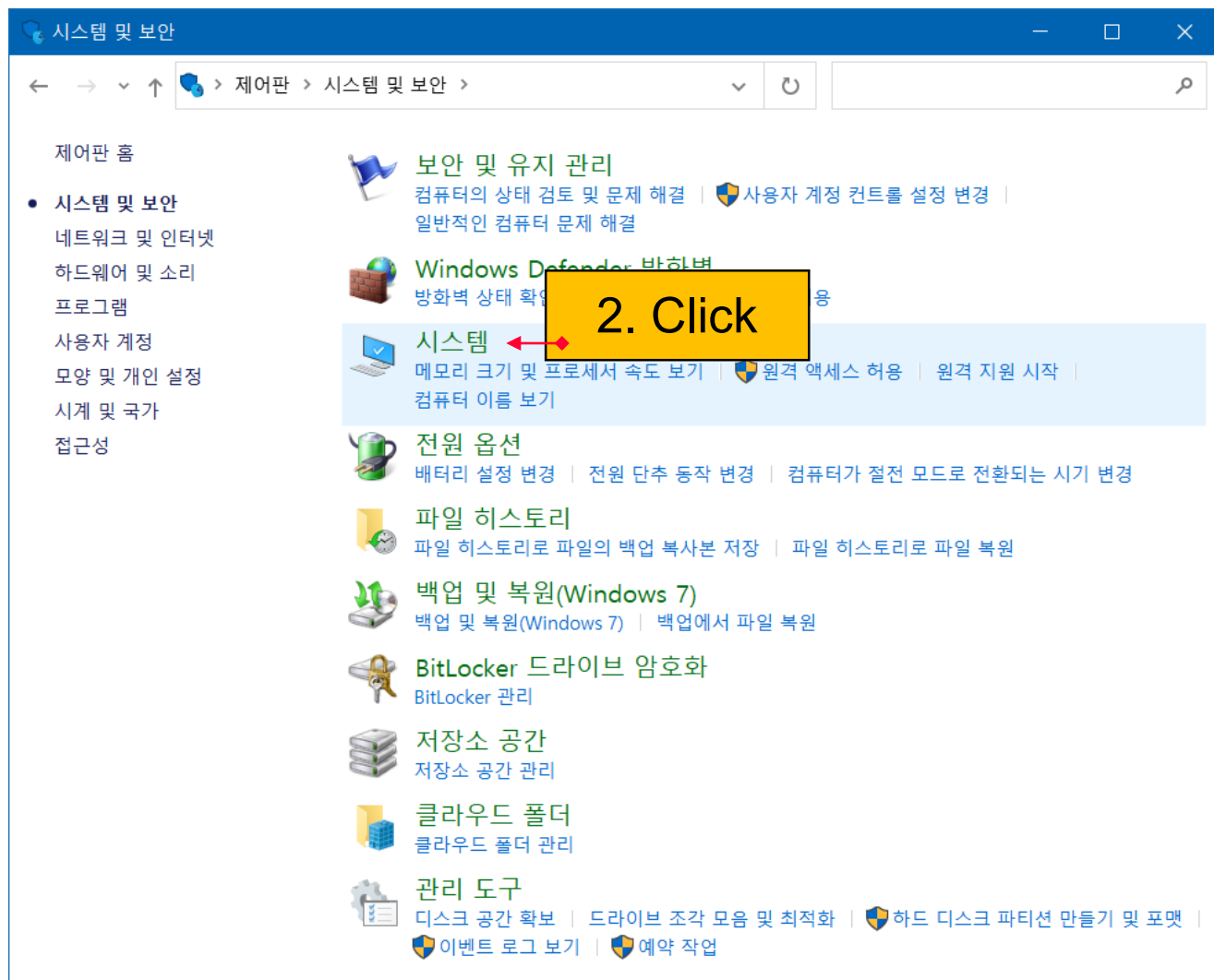
## 시스템





# JDK 환경 설정 (2)

## 시스템





# JDK 환경 설정 (3)

## 시스템

The screenshot shows the Windows Settings application, specifically the 'System' section. The left sidebar lists various system settings, with '정보' (Information) selected at the bottom. The main content area displays system information, including device name, processor, RAM, and Windows edition. A yellow box with the text '3. Click' and a red arrow points to the '고급 시스템 설정' (Advanced system settings) link in the right-hand '관련 설정' (Related settings) section. Other visible elements include the '이 PC의 이름 바꾸기' (Change this PC's name) button and the '정보' (Information) section at the bottom.

설정

홈

설정 검색

시스템

- 디스플레이
- 소리
- 알림 및 작업
- 집중 지원
- 전원 및 절전
- 배터리
- 저장소
- 태블릿
- 멀티태스킹
- PC에 화면 표시
- 공유 환경
- 클립보드
- 원격 데스크톱
- 정보

정보

PC가 모니터링되고 보호됩니다.

자세한 내용은 [Windows 보안을 참조하세요.](#)

장치 사양

장치 이름	Apollon-X1
프로세서	Intel(R) Core(TM) i7-8650U C GHz
설치된 RAM	16.0GB(15.8GB 사용 가능)
장치 ID	F5248AD3-9196-48BC-BE69-
제품 ID	00330-51937-17930-AAOEM
시스템 종류	64비트 운영 체제, x64 기반 프로세서
펜 및 터치	이 디스플레이에 사용할 수 있는 펜 또는 터치식 입력 이 없습니다.

복사

이 PC의 이름 바꾸기

Windows 사양

에디션	Windows 10 Pro
버전	21H1
설치 날짜	2022-01-04
OS 빌드	19043.1503
경험	Windows Feature Experience Pack 120.2212.4170.0

복사

제품 키 변경 또는 [Windows 버전 업그레이드](#)

서비스에 적용되는 [Microsoft 서비스 계약 읽기](#)

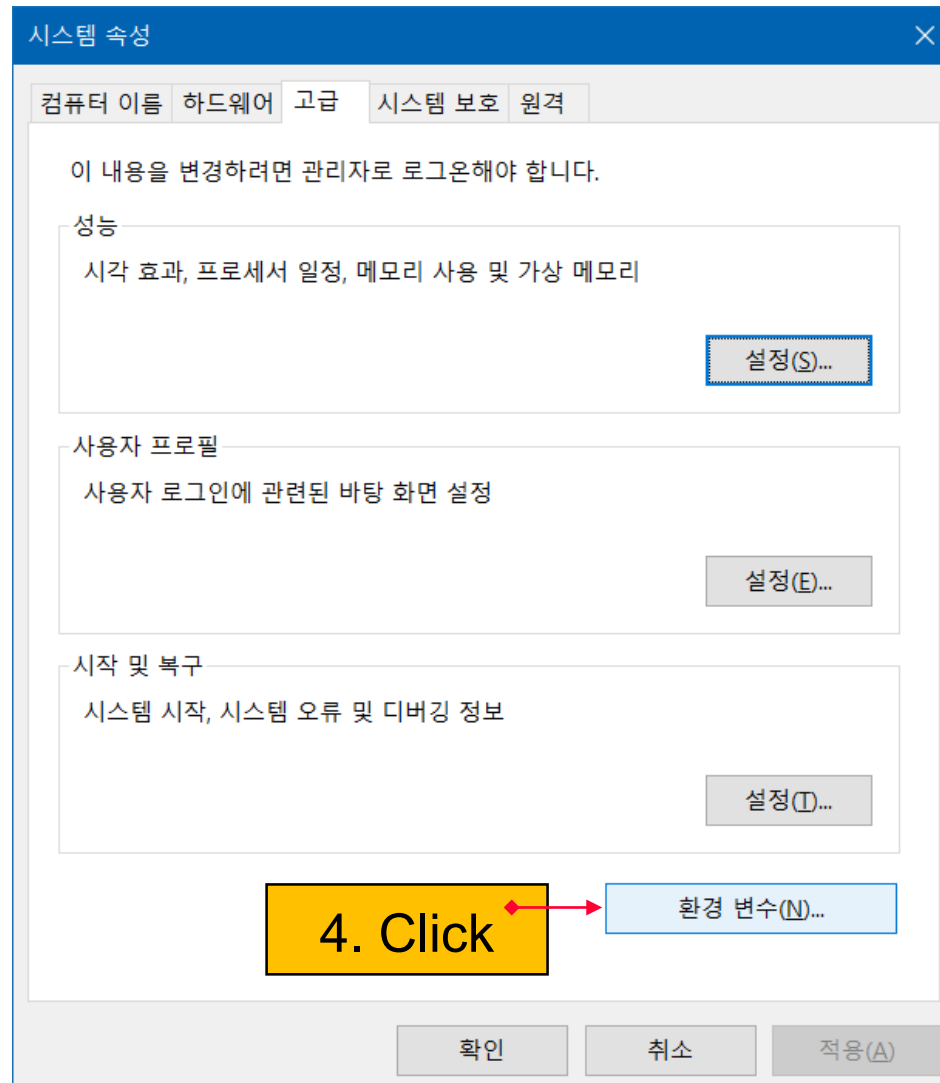
[Microsoft 소프트웨어 사용 조건 읽기](#)

관련 설정

- [BitLocker 설정](#)
- [장치 관리자](#)
- [원격 데스크톱](#)
- [시스템 보호](#)
- [고급 시스템 설정](#)
- [이 PC의 이름 바꾸기\(고급\)](#)
- [도움말 보기](#)
- [피드백 보내기](#)



# JDK 환경 설정 (4)





## 환경 변수

새로 만들기(N)...

편집(E)...

삭제(D)

새로 만들기(W)...

편집(1)...

삭제(L)

## 확인

취소

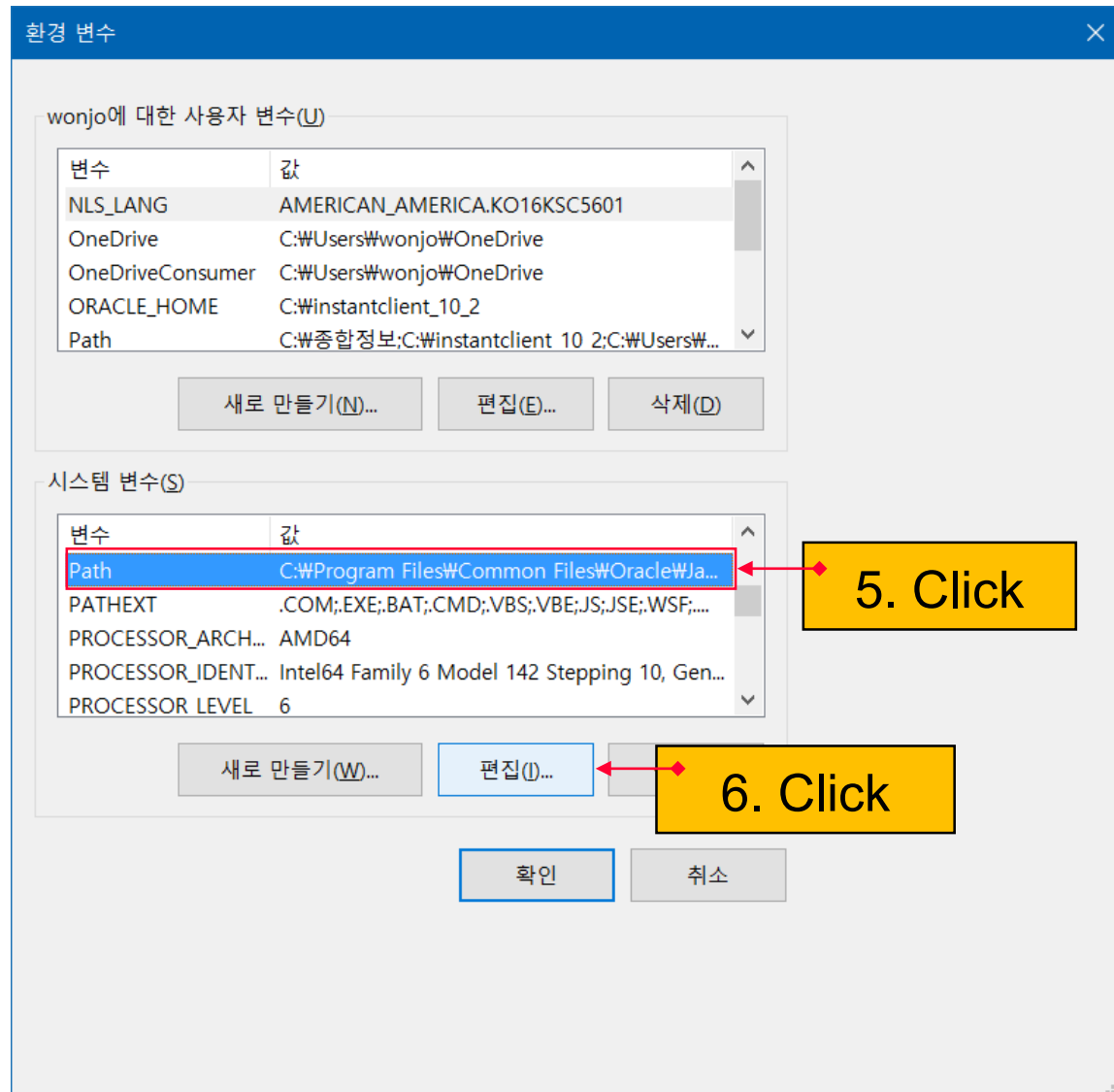






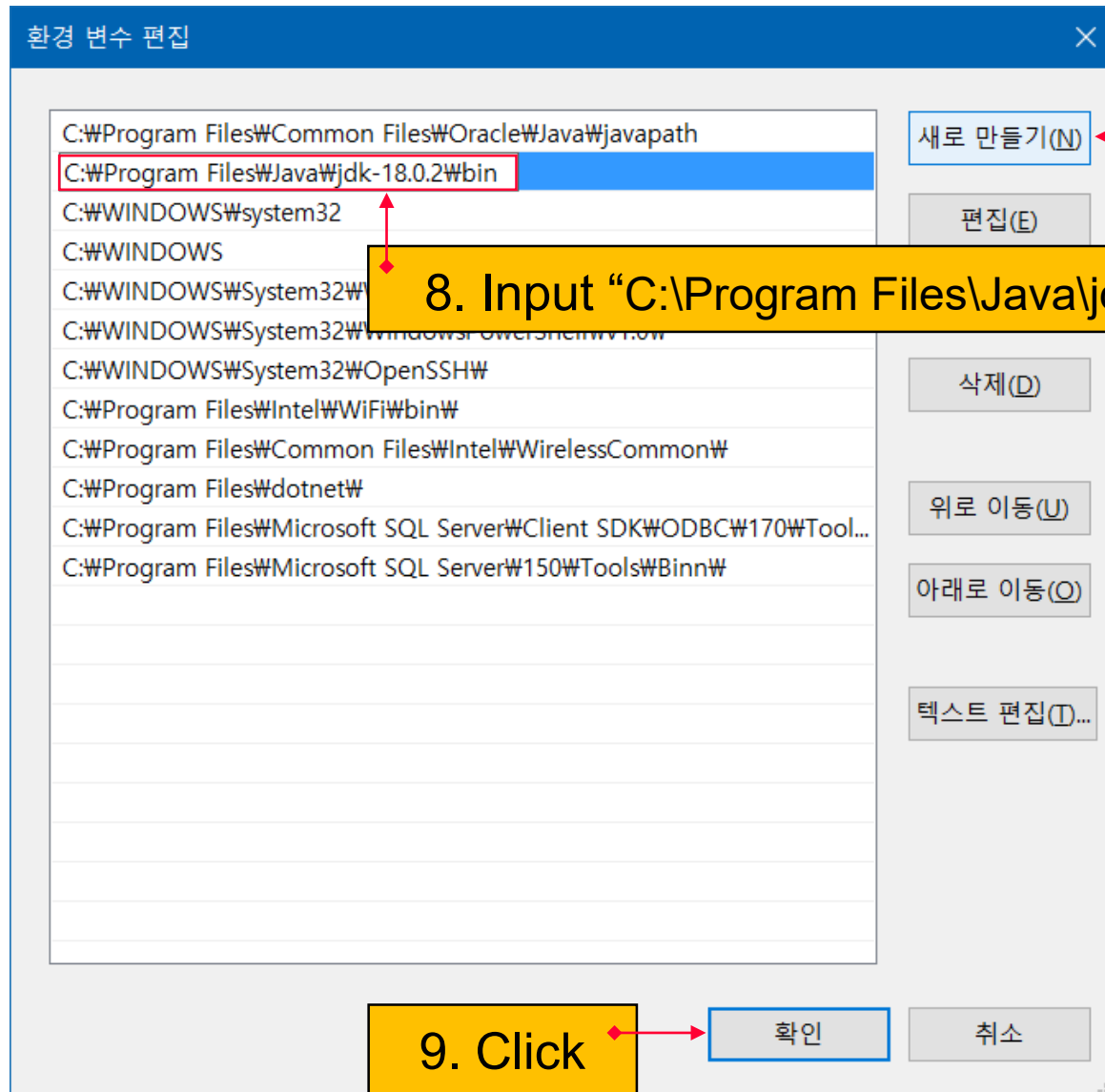
# JDK 환경 설정 (6)

## ■ Path 지정





# JDK 환경 설정 (7)



7. Click

8. Input "C:\Program Files\Java\jdk-18.0.2\bin"

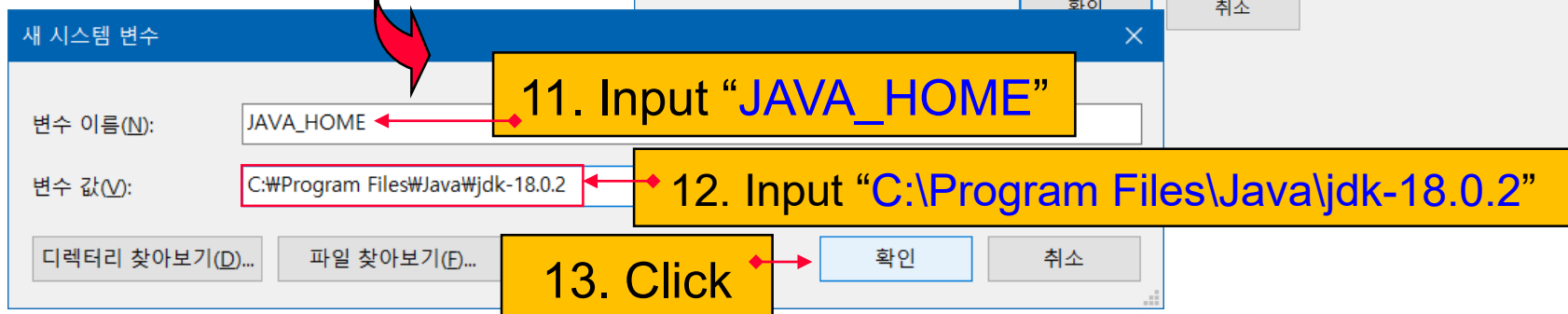
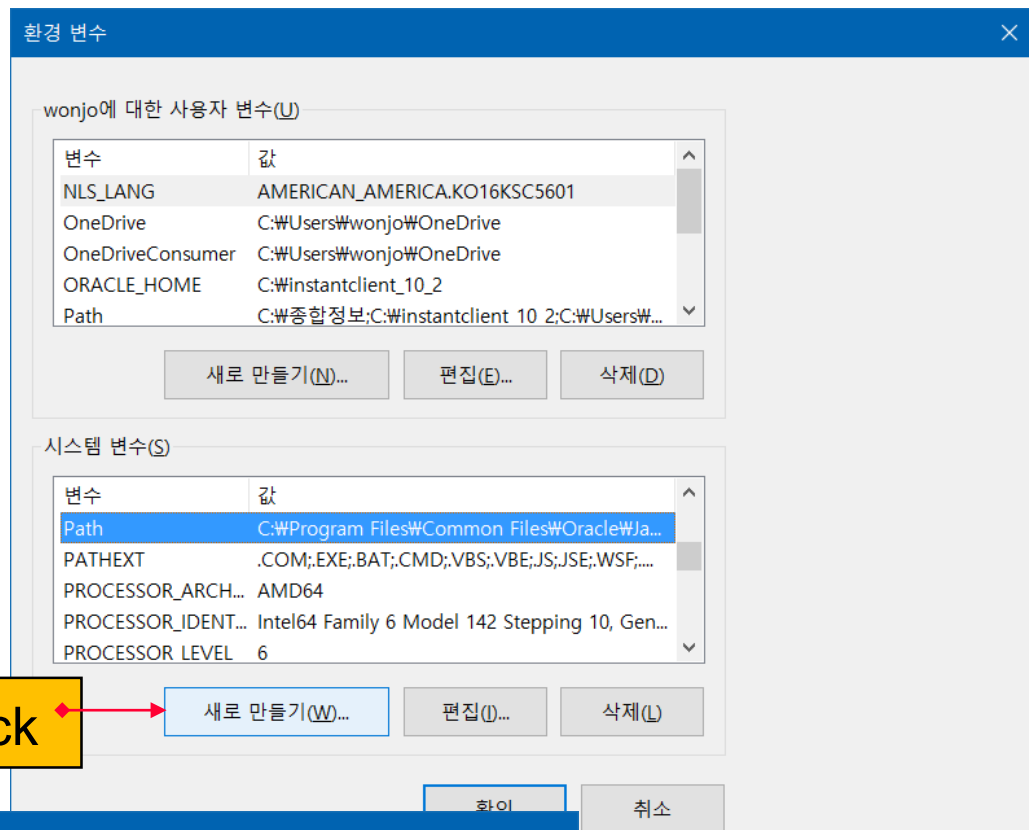
9. Click





# JDK 환경 설정 (8)

## JAVA\_HOME 지정





# NetBeans Download (1)

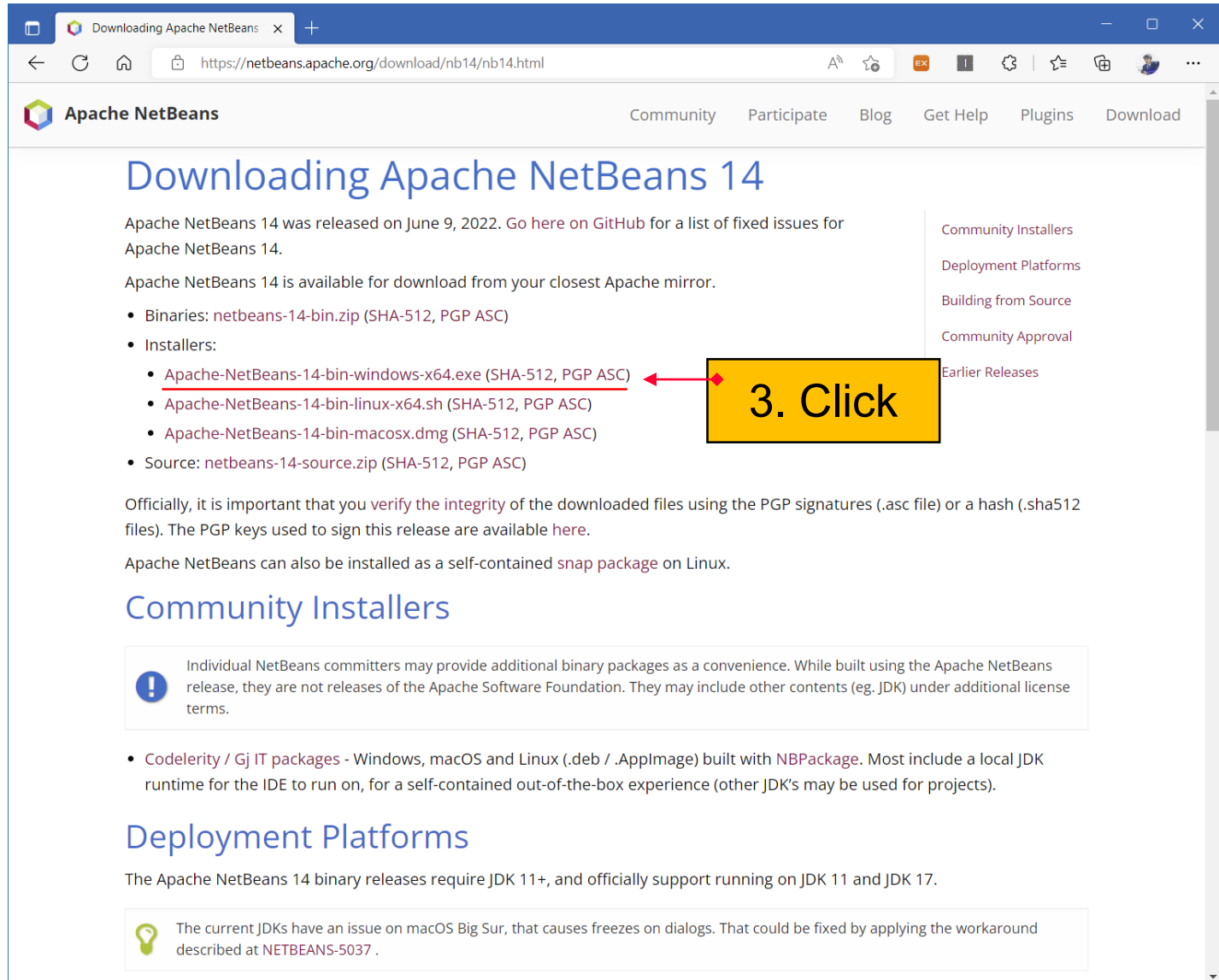
## ■ NetBeans 다운로드

The screenshot shows the Apache NetBeans Releases page in a web browser. The address bar displays the URL `https://netbeans.apache.org/download/index.html`. A yellow box with the text "1. https://netbeans.apache.org/download/index.html" has a red arrow pointing to the address bar. Below the "Latest release" section, which features "Apache NetBeans 14", a green "Download" button is highlighted with a red box. A yellow box with the text "2. Click" has a red arrow pointing to this button. The page content includes sections for "Apache NetBeans Releases", "Apache NetBeans 14" (noting it's the latest version released on June 9, 2022), "Older releases", and "Daily builds and building from source". At the bottom, there are social media icons and a link to "See this page in GitHub".





# NetBeans Download (2)



Downloading Apache NetBeans

https://netbeans.apache.org/download/nb14/nb14.html

## Apache NetBeans

Community Participate Blog Get Help Plugins Download

### Downloading Apache NetBeans 14

Apache NetBeans 14 was released on June 9, 2022. [Go here on GitHub](#) for a list of fixed issues for Apache NetBeans 14.

Apache NetBeans 14 is available for download from your closest Apache mirror.

- Binaries: [netbeans-14-bin.zip](#) (SHA-512, PGP ASC)
- Installers:
  - [Apache-NetBeans-14-bin-windows-x64.exe](#) (SHA-512, PGP ASC) ← **3. Click**
  - [Apache-NetBeans-14-bin-linux-x64.sh](#) (SHA-512, PGP ASC)
  - [Apache-NetBeans-14-bin-macosx.dmg](#) (SHA-512, PGP ASC)
- Source: [netbeans-14-source.zip](#) (SHA-512, PGP ASC)

Officially, it is important that you [verify the integrity](#) of the downloaded files using the PGP signatures (.asc file) or a hash (.sha512 files). The PGP keys used to sign this release are available [here](#).

Apache NetBeans can also be installed as a self-contained [snap package](#) on Linux.

### Community Installers

Individual NetBeans committers may provide additional binary packages as a convenience. While built using the Apache NetBeans release, they are not releases of the Apache Software Foundation. They may include other contents (eg. JDK) under additional license terms.

- [Codernity / GJ IT packages](#) - Windows, macOS and Linux (.deb / .AppImage) built with [NBPackage](#). Most include a local JDK runtime for the IDE to run on, for a self-contained out-of-the-box experience (other JDK's may be used for projects).

### Deployment Platforms

The Apache NetBeans 14 binary releases require JDK 11+, and officially support running on JDK 11 and JDK 17.

The current JDKs have an issue on macOS Big Sur, that causes freezes on dialogs. That could be fixed by applying the workaround described at [NETBEANS-5037](#).

Community Installers  
Deployment Platforms  
Building from Source  
Community Approval  
Earlier Releases



# NetBeans Download (3)

Apache Downloads

https://www.apache.org/dyn/closer.cgi/netbeans/netbeans-installers/14/Apache-NetBeans-14-bin-...

News About Make a Donation The Apache Way Join Us Downloads

THE APACHE SOFTWARE FOUNDATION ESTABLISHED 1999

COMMUNITY-LED DEVELOPMENT "THE APACHE WAY"

Projects People Community License Sponsors

We suggest the following site for your download:

<https://dlcdn.apache.org/netbeans/netbeans-installers/14/Apache-NetBeans-14-bin-windows-x64.exe>

Alternate download locations are suggested below.

It is essential that you verify the integrity of the downloaded file using the PGP signature (.asc file) or a hash (.md5 or .sha\* file).

## HTTP

<https://dlcdn.apache.org/netbeans/netbeans-installers/14/Apache-NetBeans-14-bin-windows-x64.exe>

## BACKUP SITE

<https://dlcdn.apache.org/netbeans/netbeans-installers/14/Apache-NetBeans-14-bin-windows-x64.exe>

## VERIFY THE INTEGRITY OF THE FILES

It is essential that you verify the integrity of the downloaded file using the PGP signature (.asc file) or a hash (.md5 or .sha\* file). Please read Verifying Apache Software Foundation Releases for more information on why you should verify our releases.

Verify the PGP signature using PGP or GPG. First download the KEYS as well as the .asc signature file for the relevant distribution.

```
% gpg --import KEYS
% gpg --verify downloaded_file.asc downloaded_file
```

or

```
% pgpk -a KEYS
% pgpv downloaded_file.asc
```

or

```
% pgp -ka KEYS
% pgp downloaded_file.asc
```





# NetBeans Download (4)

## Download

File Explorer window showing the download of NetBeans. The path is: 내 PC > INHA (D:) > [LECTURE] > Java\_프로그래밍 > Tool.

The file list shows the following files:

이름	날짜	타입	크기
AccessDatabaseEngine_x64.exe	2015-11-10 오전 1:17	응용 프로그램	27,961KB
AccessDatabaseEngine_x64.zip	2020-11-09 오전 10:02	압축(ZIP) 폴더	53,547KB
Apache-NetBeans-14-bin-windows-x64.exe	2022-08-08 오전 10:42	응용 프로그램	439,311KB
Automobile.mdb	2017-11-19 오전 11:08	Microsoft Access Database	284KB
Automobile64.accdb	2017-11-19 오후 1:11	Microsoft Access Database	416KB
jdk-7u80-windows-i586.exe	2020-11-09 오전 12:58	응용 프로그램	141,671KB
jdk-7u80-windows-x64.exe	2020-11-09 오전 12:55	응용 프로그램	143,451KB
jdk-8u141-nb-8_2-windows-i586.exe	2017-08-27 오후 10:42	응용 프로그램	326,603KB
jdk-8u141-nb-8_2-windows-x64.exe	2017-08-27 오후 10:16	응용 프로그램	337,069KB
jdk-18_windows-x64_bin.exe	2022-08-08 오전 9:40	응용 프로그램	157,048KB
netbeans-8.2-windows.exe	2018-08-26 오전 10:56	응용 프로그램	225,472KB
sqldeveloper-17.3.1.279.0537-no-jre.zip	2017-11-27 오후 8:57	압축(ZIP) 폴더	365,660KB
WINDOWS.X64_213000_db_home.zip	2021-11-16 오후 9:47	압축(ZIP) 폴더	2,599,398KB

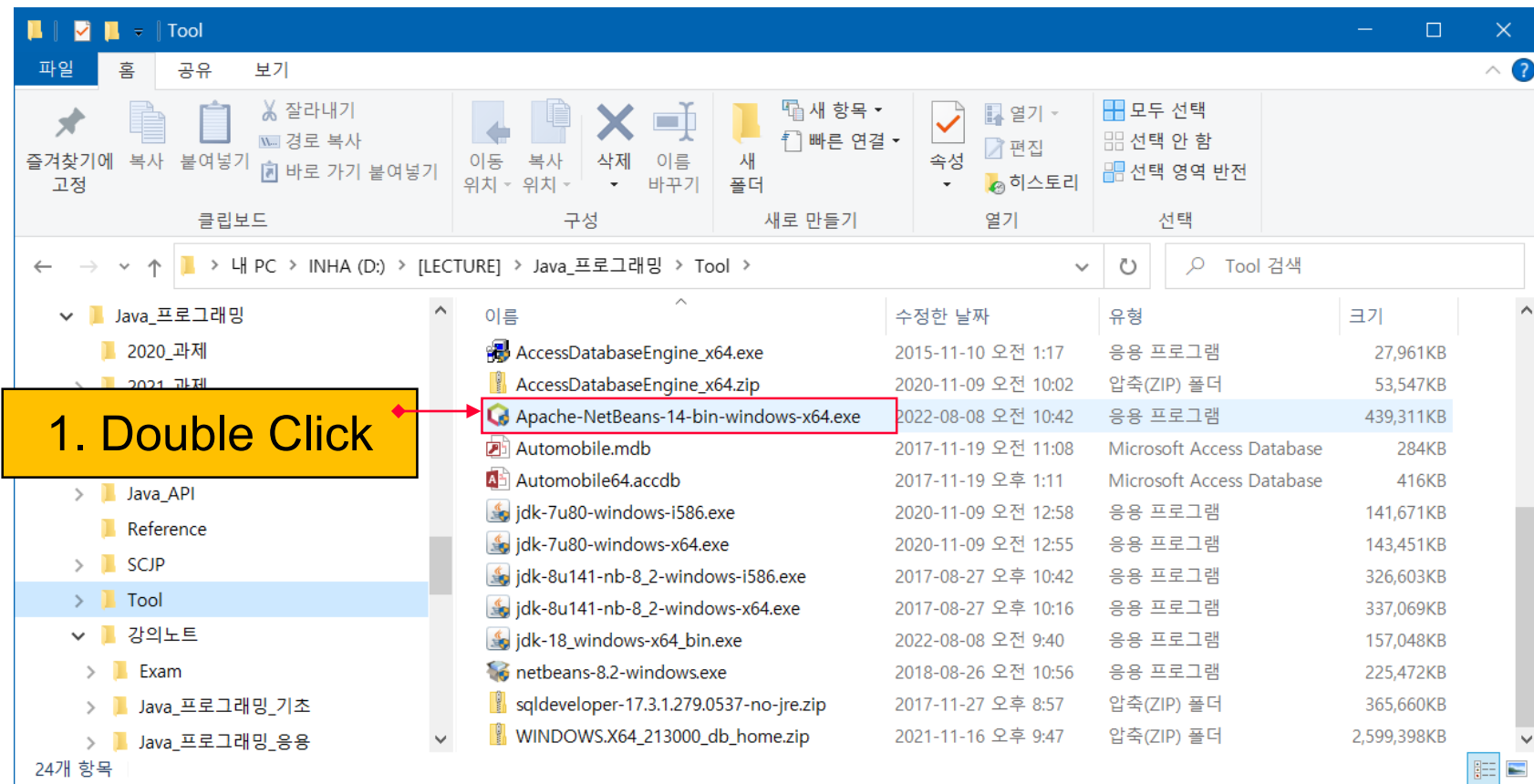
The file **Apache-NetBeans-14-bin-windows-x64.exe** is highlighted, and a yellow box with the text **6. Confirm** points to it.





# NetBeans 설치 (1)

## Install NetBeans

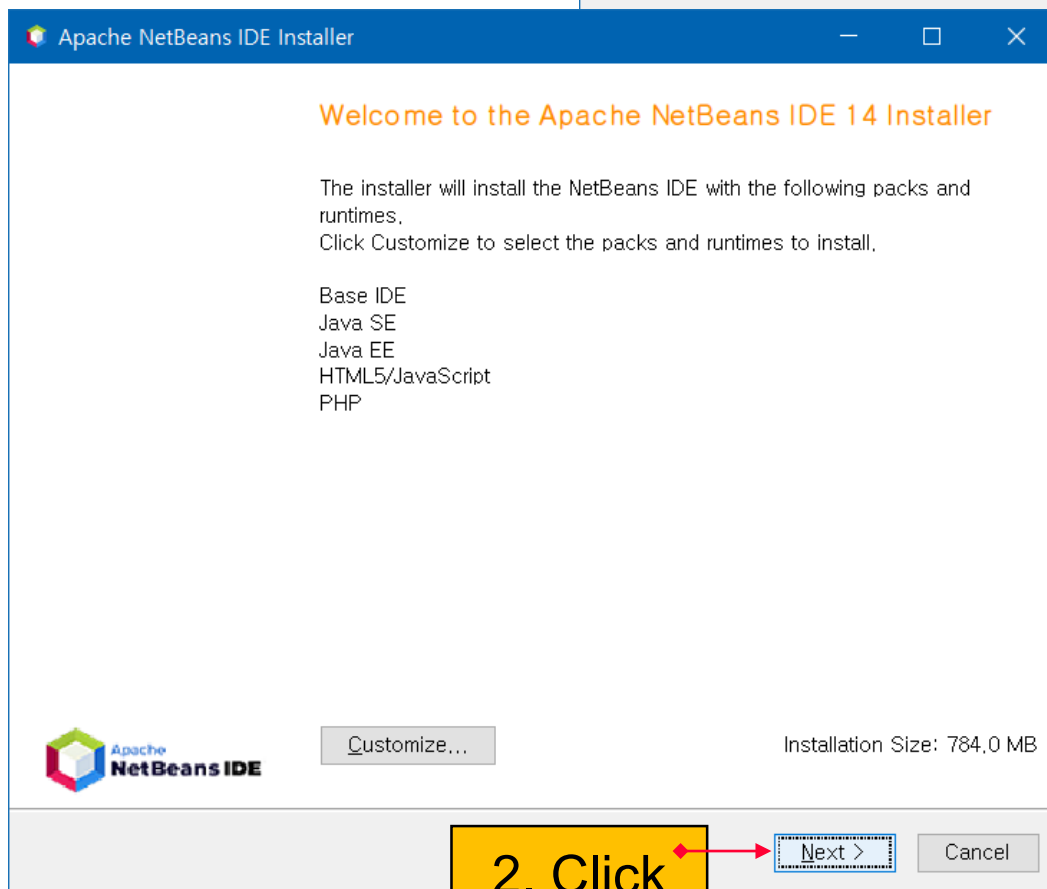
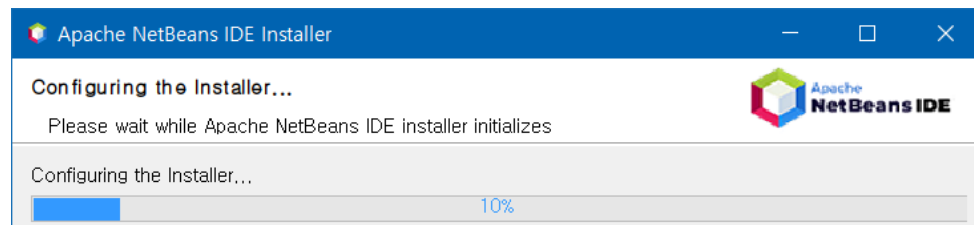






# NetBeans 설치 (2)

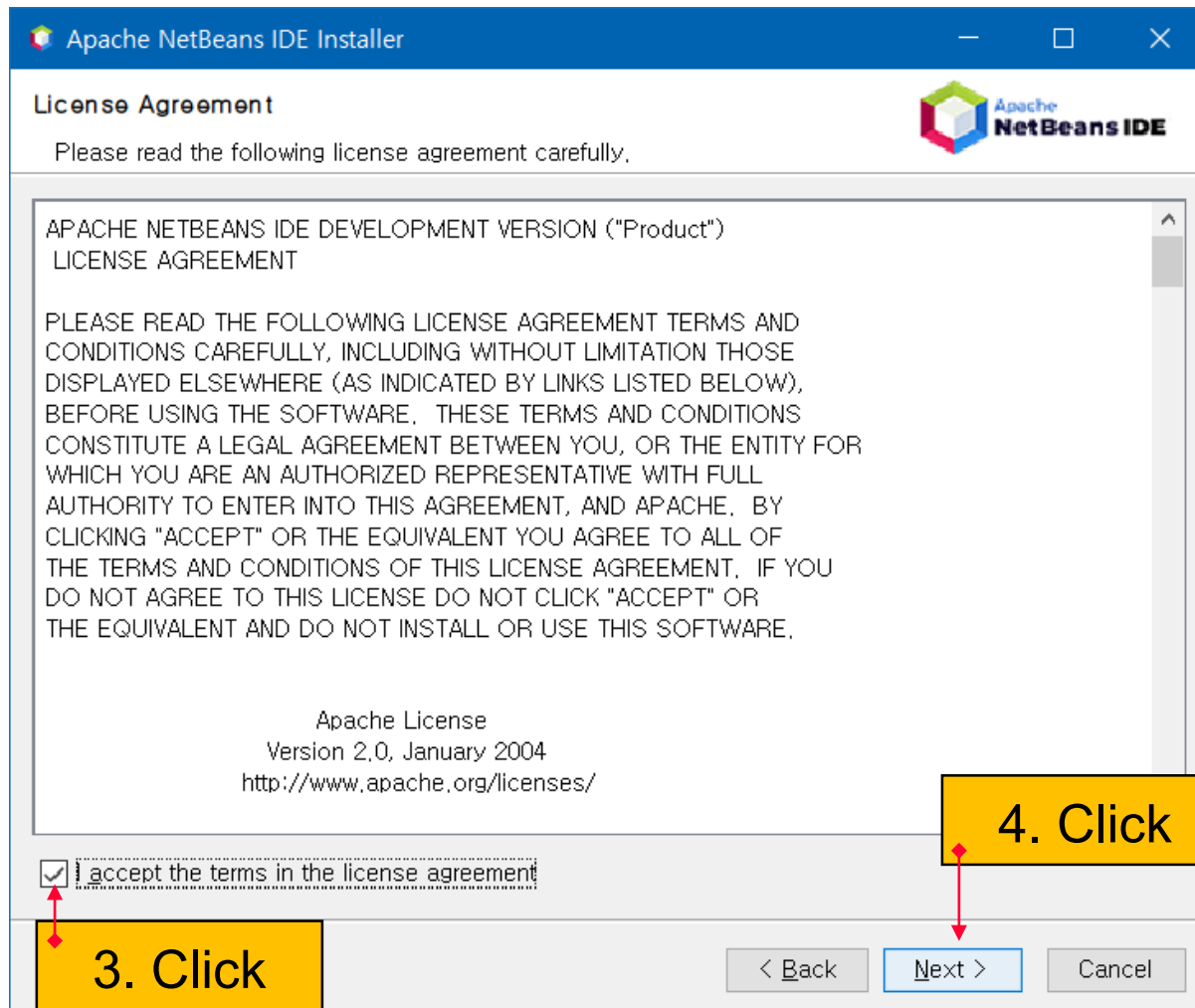
## NetBeans 설치





# NetBeans 설치 (3)

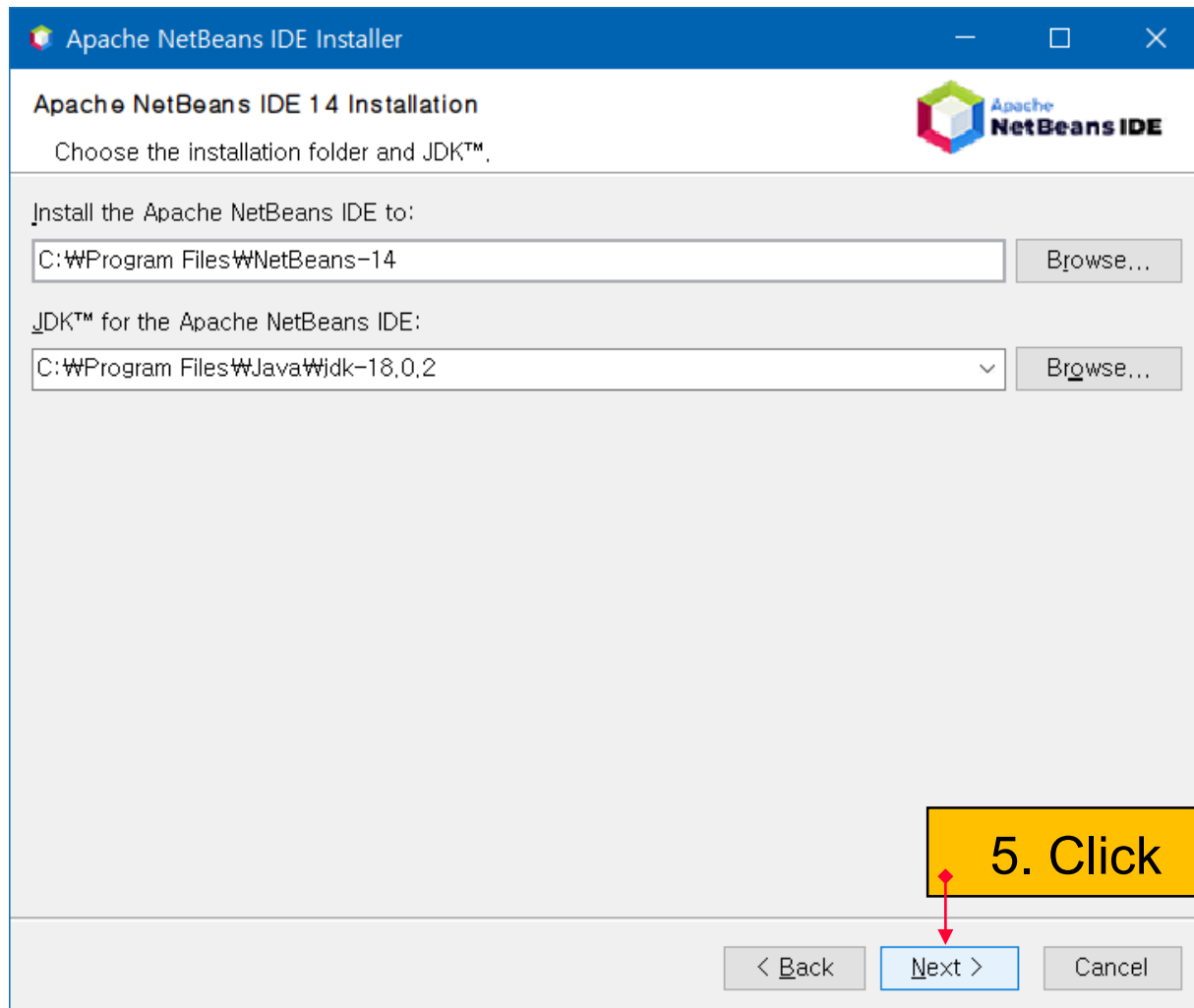
## License Agreement





# NetBeans 설치 | (4)

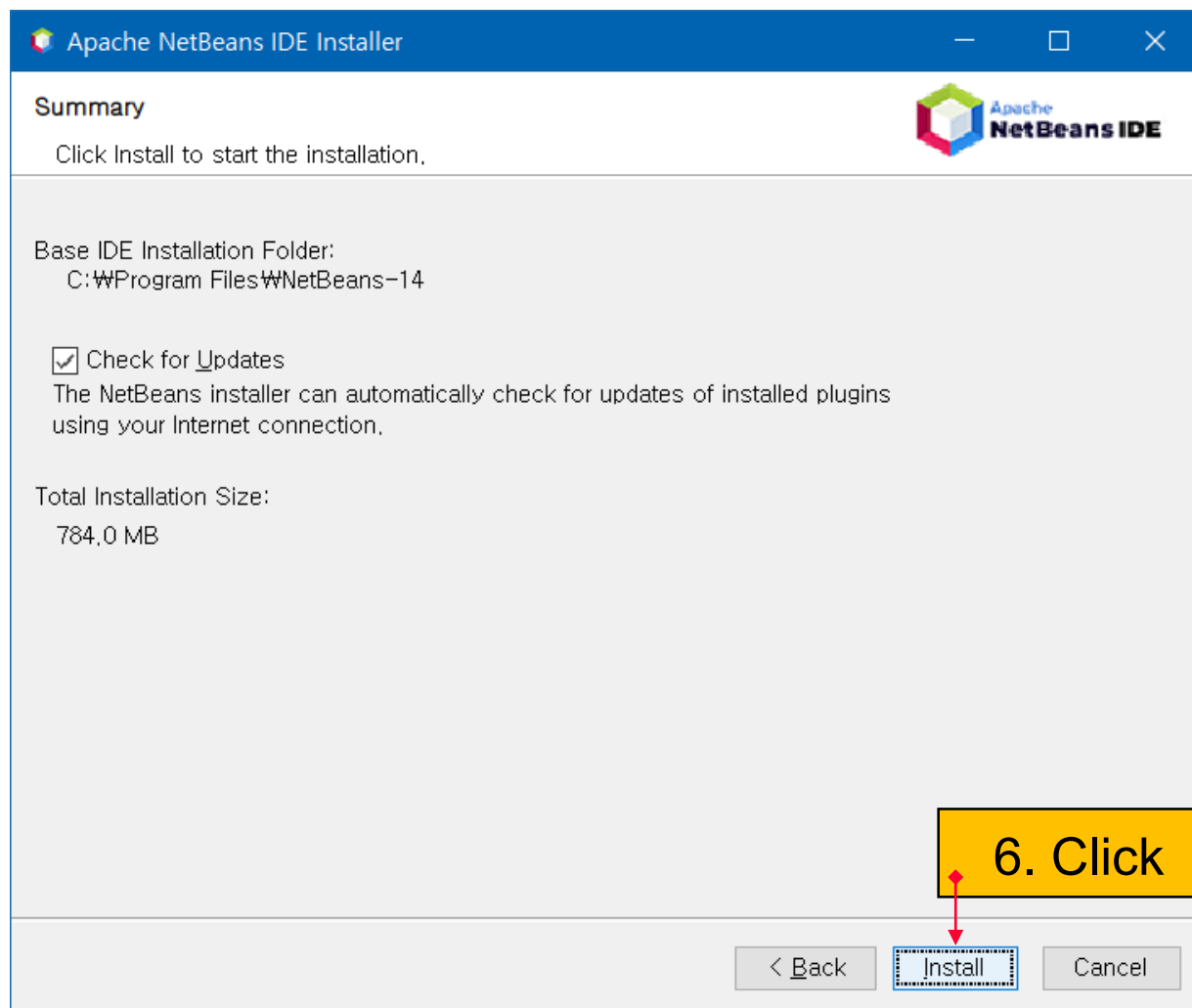
## ■ Configuration Settings





# NetBeans 설치 | (5)

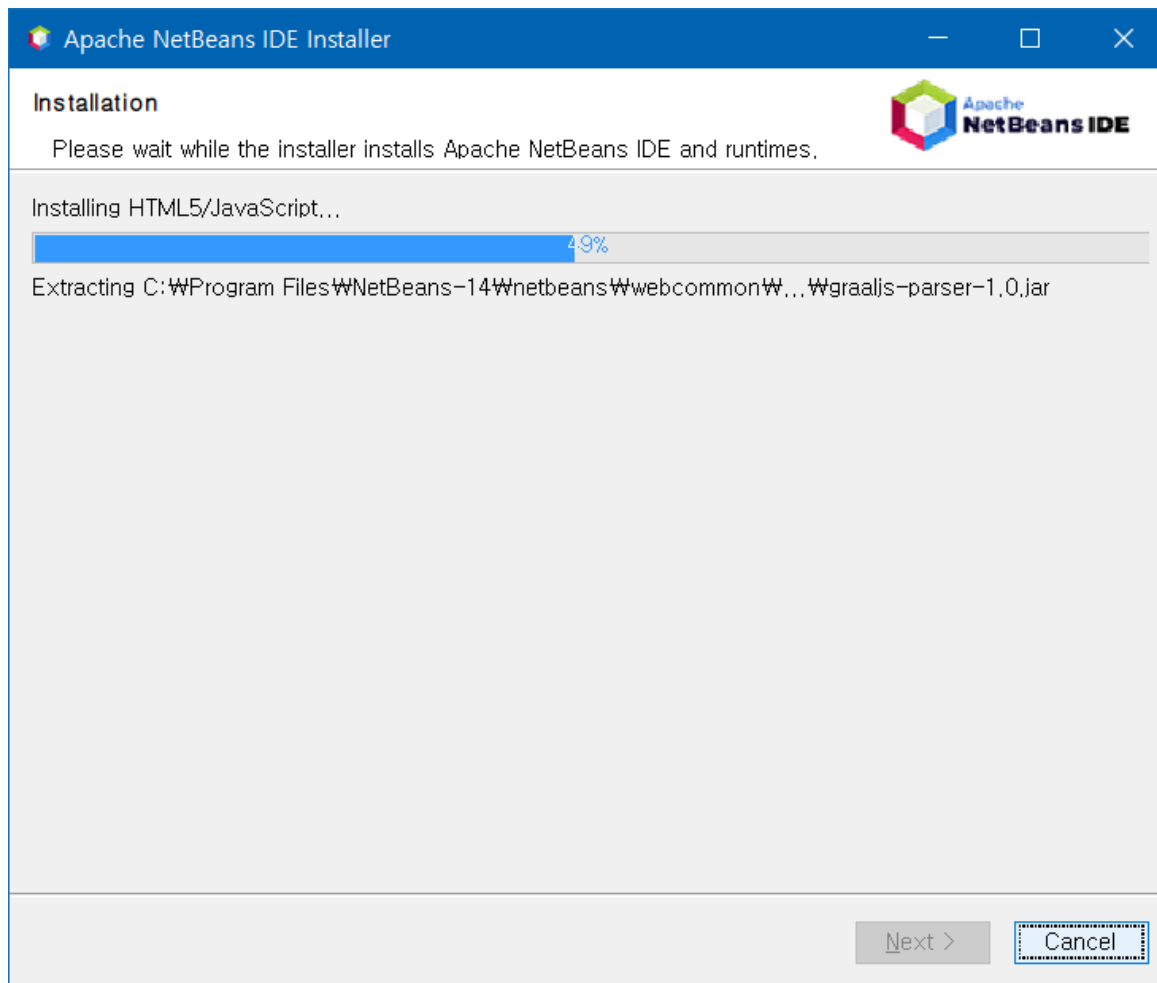
## ■ Check for Updates





# NetBeans 설치 | (6)

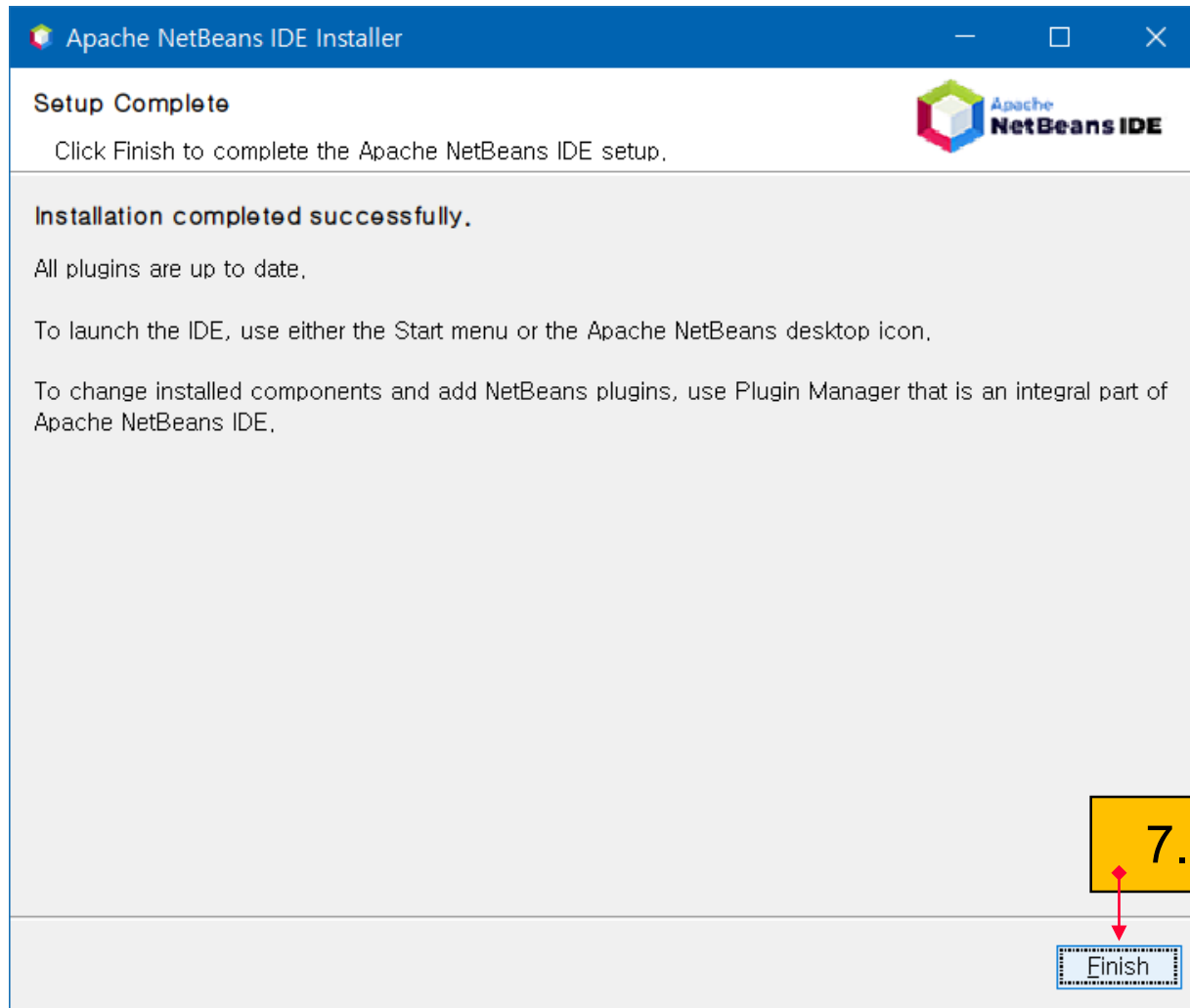
## ■ Installing





# NetBeans 설치 (7)

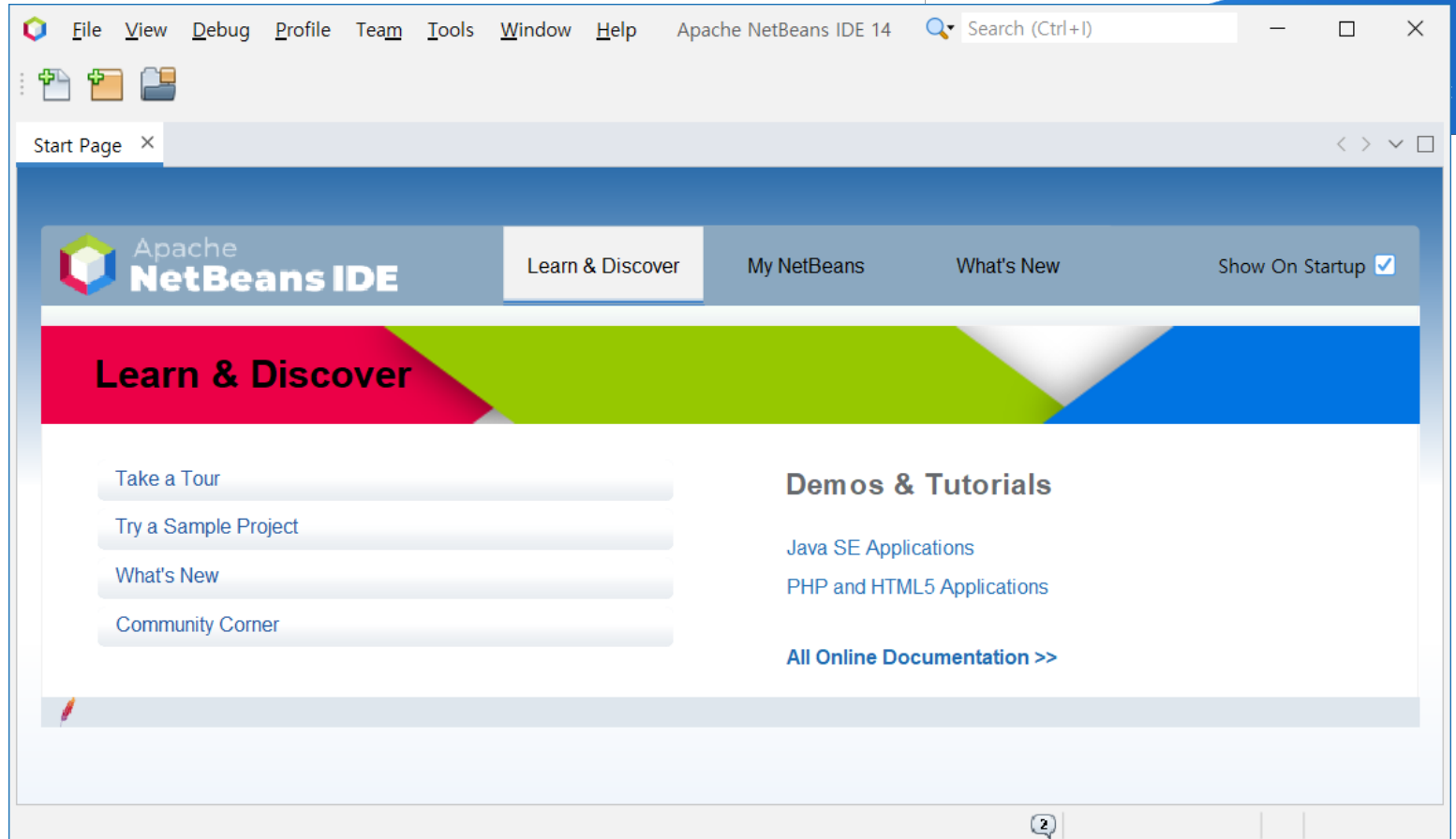
## ■ Installation success





# NetBeans 실행 (1)

## Execution





# 학습 요약

- ❖ Java 프로그램 개발 도구
- ❖ JDK(Java Development Kit) 설치
- ❖ NetBeans 설치







# Download

■ jdk-8u141-nb-8\_2-windows-i586

■ jdk-8u141-nb-8\_2-windows-x64

❖ [https://drive.google.com/drive/folders/1fyppVCOEWiVi8EXB3iX9isZKcG\\_se3-Z?usp=sharing](https://drive.google.com/drive/folders/1fyppVCOEWiVi8EXB3iX9isZKcG_se3-Z?usp=sharing)

