

# Tutorial For JDK Installing (Mac Version)

Based on the tutorial of "2020S-Java-A" designed by teaching group in SUSTech

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## Objectives

1. Install JDK 17 and configure environment variable.
2. Learn compilation and execution of your first Java program in command line.

## Software Installation

### 1. JDK Introduce

JDK: The Java Development Kit (JDK) is a software development environment for developing Java applications and applets. It includes a Java Runtime Environment (JRE), an interpreter/loader (java), a compiler (javac), an archiver (jar), a documentation generator (javadoc) and other tools needed in Java development.

### 2. Download and Install JDK

#### 2.1 Download JDK without brew

URL of download JDK:

<https://www.oracle.com/java/technologies/downloads/#java17>

Linux	macOS	Windows
Product/file description		
File size		
Download		
Arm 64 Compressed Archive	167.47 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_macos-aarch64_bin.tar.gz">https://download.oracle.com/java/17/latest/jdk-17_macos-aarch64_bin.tar.gz</a> (sha256 <a href="#">🔗</a> )
Arm 64 DMG Installer	166.86 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_macos-aarch64_bin.dmg">https://download.oracle.com/java/17/latest/jdk-17_macos-aarch64_bin.dmg</a> (sha256 <a href="#">🔗</a> )
x64 Compressed Archive	170.01 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_macos-x64_bin.tar.gz">https://download.oracle.com/java/17/latest/jdk-17_macos-x64_bin.tar.gz</a> (sha256 <a href="#">🔗</a> )
x64 DMG Installer	169.39 MB	<a href="https://download.oracle.com/java/17/latest/jdk-17_macos-x64_bin.dmg">https://download.oracle.com/java/17/latest/jdk-17_macos-x64_bin.dmg</a> (sha256 <a href="#">🔗</a> )

**Note:** If you have MacBook with M1 or newer chips, choose `Arm 64 DMG Installer` for download, otherwise download `x64 DMG Installer` version. You may confirm this information in the system options.

#### Installation:

Once downloaded, run the .dmg file. Follow the prompts to install the JDK. You'll need administrator access. Double click the JDK Software, and install it.



Today's exercise is designed to make sure that the Java programming environment is correctly installed on your machine.

Open a terminal window or command prompt. In Windows 7 or newer, Start Menu | All Programs | Accessories | Command Prompt, or type `terminal` at the search box. Type the following command:

```
java -version
```

Then if it returns as following or something similar, you have installed it successfully.

```
java version "17.0.4.1" 2022-08-18 LTS
Java(TM) SE Runtime Environment (build 17.0.4.1+1-LTS-2)
Java HotSpot(TM) 64-Bit Server VM (build 17.0.4.1+1-LTS-2, mixed mode, sharing)
```

```
C:\Users\wangd\Desktop\test>java --version
openjdk 17.0.2 2022-01-18
OpenJDK Runtime Environment (build 17.0.2+8-86)
OpenJDK 64-Bit Server VM (build 17.0.2+8-86, mixed mode, sharing)

C:\Users\wangd\Desktop\test>javac --version
javac 17.0.2
```

## 2.2 Download JDK with brew

Press `command + space` to open search bar, input `terminal` and open the first result in the search bar:

```
> java -version
java version "17.0.4.1" 2022-08-18 LTS
Java(TM) SE Runtime Environment (build 17.0.4.1+1-LTS-2)
Java HotSpot(TM) 64-Bit Server VM (build 17.0.4.1+1-LTS-2, mixed mode, sharing)

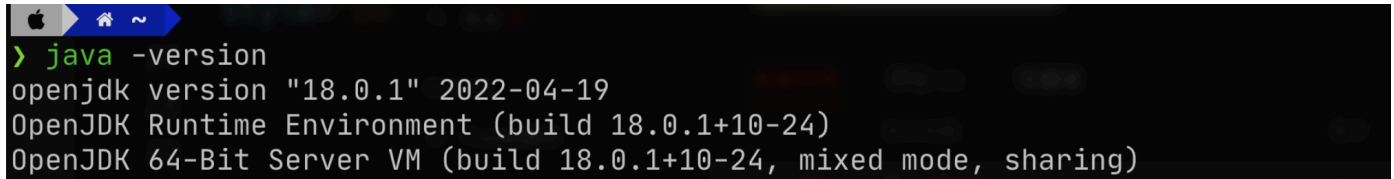
> /usr/libexec/java_home -V
Matching Java Virtual Machines (1):
 17.0.4.1 (arm64) "Oracle Corporation" - "Java SE 17.0.4.1" /Library/Java/JavaVirtualMachines/jdk-17.0.4.1.jdk/Contents/Home
/Library/Java/JavaVirtualMachines/jdk-17.0.4.1.jdk/Contents/Home
```

Input `brew install java` to install.

```
> brew install java
Running 'brew update --preinstall'...
=> Auto-updated Homebrew!
Updated 6 taps (romkatv/powerlevel10k, carlocab/personal, homebrew/core, homebrew/cask, homebrew/cask-fonts and dart-lang/dart).
=> New Formulae
adamstark-audiofile      ghorg                    mariadb@10.7             rdb
age-plugin-yubikey       git-codereview          markdown-toc             redis@6.2
agg                      git-delete-merged-branches mlt                       release-it
arxiv_latex_cleaner     git-sync               mbw                      req
astro                   git-workspace          mcap                    ripsecrets
aws-nuke                 glibc@2.13            meek                    rush-parallel
aws2-wrap               glider                 mesheryctl              sdl2_sound
aztfy                   gnustep-base           metalang99              sftpgo
berkeley-db@05          go@1.18                micro_inetd             sgn
bfgminer                 goctl                  minimap2                sgr
bore-cli                 gokart                 mkfontscale             shaderc
burst                    groestlcoin            mkp224o                 slither-analyzer
c2rust                  gum                    mle                      smap
```

```
=> Summary
🍺 /opt/homebrew/Cellar/openjdk/18.0.2.1: 642 files, 309MB
=> Running 'brew cleanup openjdk'...
Disable this behaviour by setting HOMEBREW_NO_INSTALL_CLEANUP.
Hide these hints with HOMEBREW_NO_ENV_HINTS (see `man brew`).
```

Input `java -version` to check whether the installation is successful:

A screenshot of a macOS terminal window. The title bar shows the Apple logo, a home button, and a tilde (~). The terminal prompt is a green prompt character followed by the command 'java -version'. The output consists of three lines: 'openjdk version "18.0.1" 2022-04-19', 'OpenJDK Runtime Environment (build 18.0.1+10-24)', and 'OpenJDK 64-Bit Server VM (build 18.0.1+10-24, mixed mode, sharing)'.

```
> java -version
openjdk version "18.0.1" 2022-04-19
OpenJDK Runtime Environment (build 18.0.1+10-24)
OpenJDK 64-Bit Server VM (build 18.0.1+10-24, mixed mode, sharing)
```

## 4. Editor

A simple editor **Visual Studio Code** is recommended for beginners.

Download Visual Studio Code: <https://code.visualstudio.com/>

Or, you can simply use any text editor (the source code of Java programs is just a sequence of characters), for example **notepad** on windows and **TextEdit** on Mac.

## Exercise

### Compile a Java Program in Command line

- Open text file or create a new text file and type the following code.

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

- Using the “save as” command in the “File” menu to save the file with the name `Demo.java`. Note that the .java file name has to be **the same as** the main Class name in your program.
- Open the `cmd` program; in the `cmd` window, use `cd` command to go to the directory where you save your `Demo.java`; use `javac` command to compile your “.java” file; use `java` command to execute the .class file (which must have a main function). The procedure is as follows

```
javac Demo.java

java Demo
Hello, world!
```

```
Apple ~ /ChromeDownload  
> javac Demo.java  
  
Apple ~ /ChromeDownload  
> java Demo  
Hello, world!
```

## Other Basic CMD:

- go into sub folder `xxx`:

```
cd xxx
```

- go into root folder:

```
cd /
```

- go into parent folder:

```
cd ..
```

- find all files in current folder:

```
ls
```

In this lab, you are using an editor and the compiler separately. There are software products (e.g. Eclipse, NetBeans, IDEA) that could link them up and facilitate your work. In this semester, you are recommended to use IDEA. You can download the community version at the following link:

<https://www.jetbrains.com/idea/download/>

More detailed introductions of how to use IDEA will be introduced in future labs