Tutorial For JDK Installing

> Based on the tutorial of "2020S-Java-A" designed by teaching group in SUSTech
>
> Modified (mainly change to markdown file) by ZHU Yueming in 2021. Jan. 11th
>
> Modified (mainly change to JDK17 version) by LI Boao in 2022. Sep. 3rd

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

URL of download JDK:

https://jdk.java.net/archive/

Note: You need to download the corresponding JDK according to your operating system.

Please choose 17.0.2 version.

If you use Windows 64-bit, click 'zip' and start downloading.

If you use Mac OS, please check the form of your CPU. If your computer uses Intel chip, please download "x64" version. If your computer uses Apple M1 chip, please download "AArch64" version.

Installation:

Once downloaded, just uncompress the zip all.

Then you will see a directory like this.

However, the system cannot find the *java/javac* file under the "bin" directory at once.

So we need to configure the environment variable in order to solve the problem.
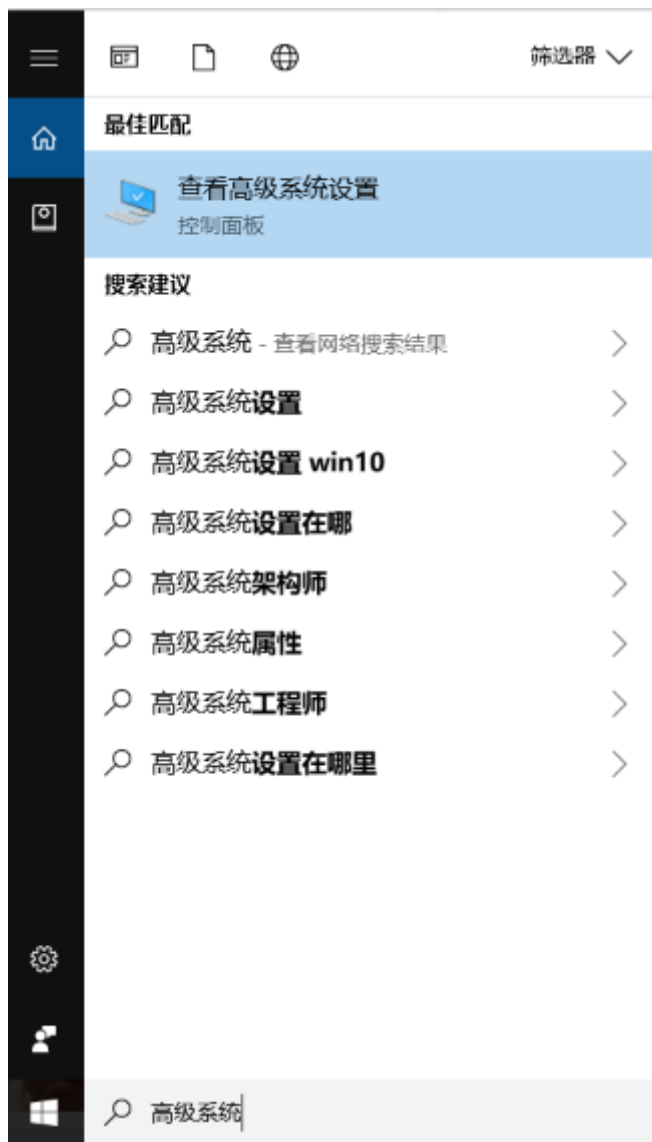
3. Environment Variable

If you are a **Mac OS** user, you can ignore environment variable in this lab.

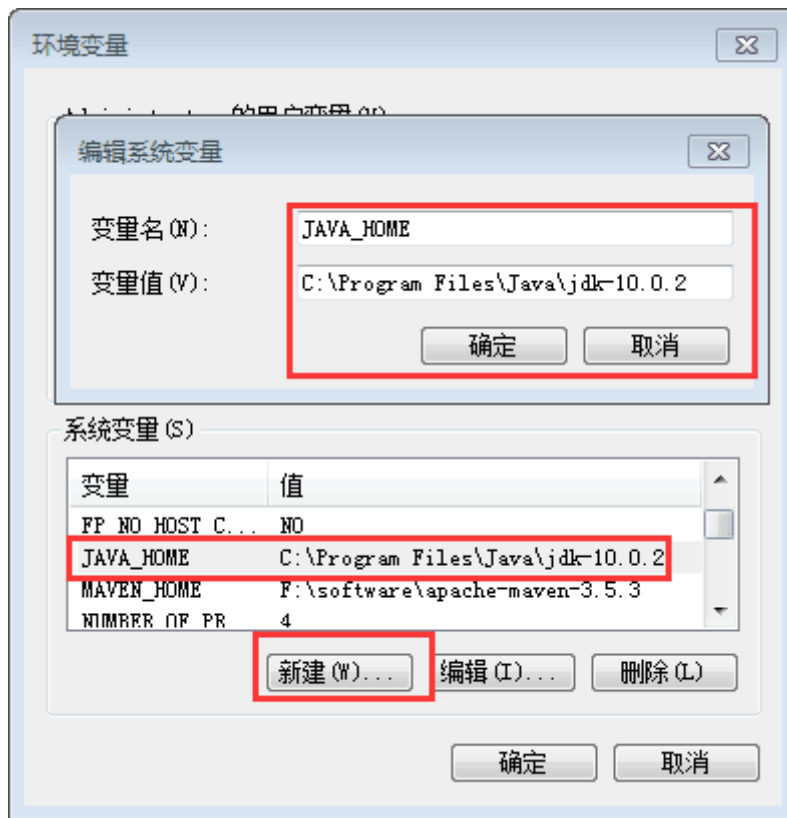If you are a Windows user, you need to do as following steps.

- Advanced System Settings: Type **advanced system settings** (高级系统设置) in the search box (beside the Windows start button), clicks View **advanced system settings**.

  Note: You can also find it by right click "My computer", then choose "Properties".
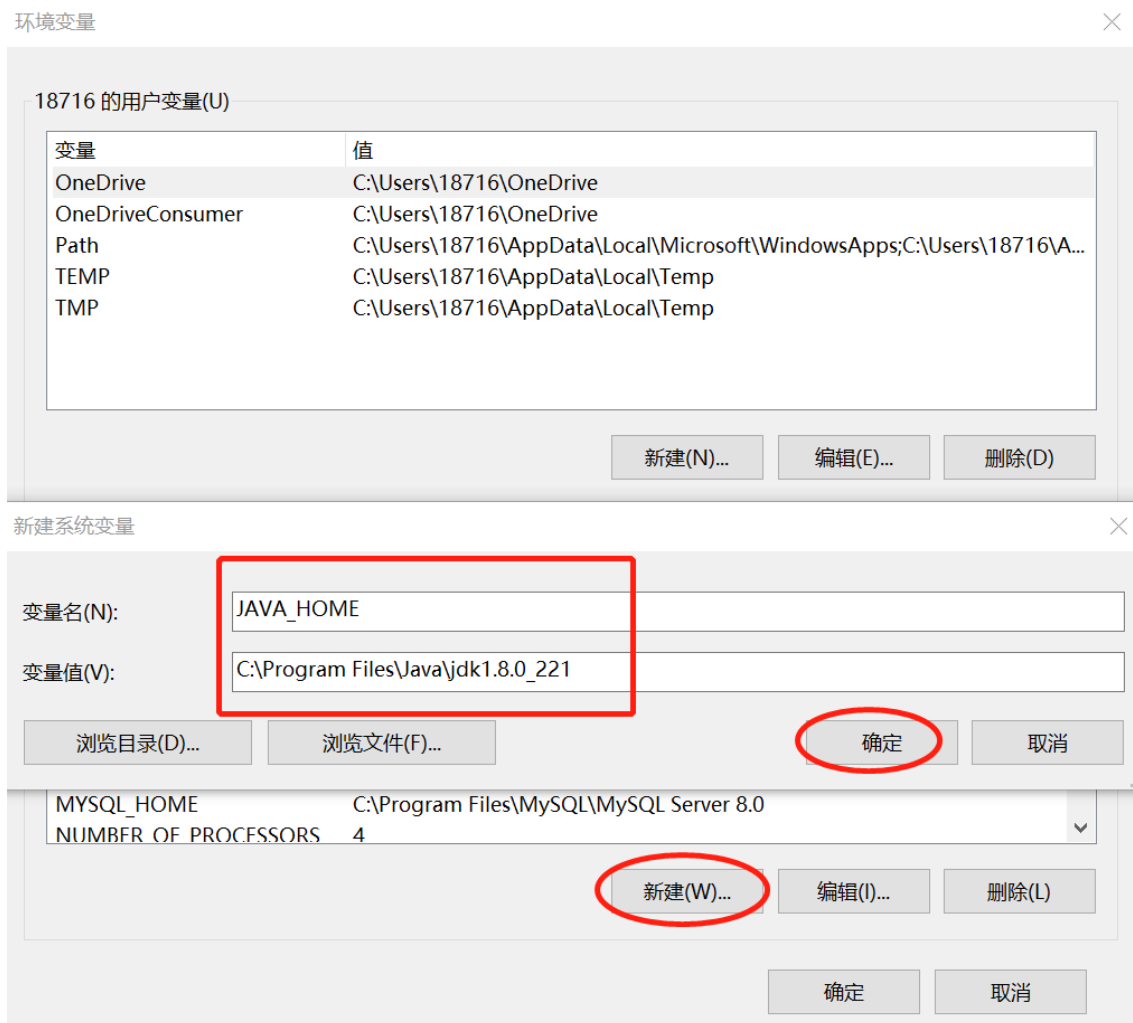
- Add `JAVA_HOME`: First click **environment variables**(环境变量). Create a new **System variables**(系统变量), name the variable as `JAVA_HOME` and set the value as the installation location of JDK. *(The following picture assumes JDK 10 is installed, find your equivalent JDK 17 folder)*
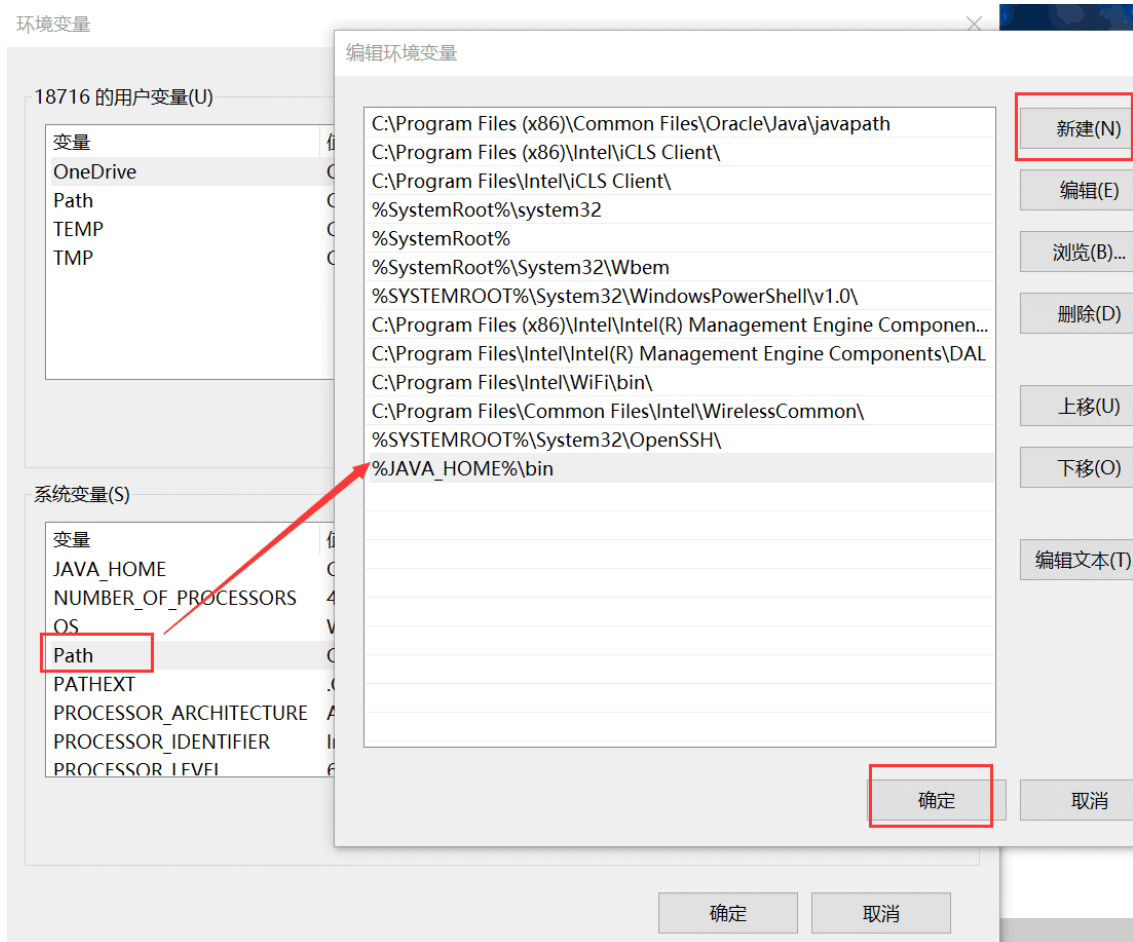
  Windows 7 version:

windows 10/11 version:

- Update Path: In System variables, find **PATH**, clicks edit and append this `%JAVA_HOME%\bin` into the last line (Windows 10/11 user)

Click "Confirm" to save the settings.

- Restart your command prompt to load the environment configure.
- Checking

Press Win+R. Type cmd to enter the command prompt.

Then type the command below:

```
java -version
javac -version
```

You will see one of two things. If the JDK / Java compiler is correctly installed, you should see a version number like so:

However, if the JDK isn't installed or the environment variables are not properly configured, then you'll see an error like so:

```
C:\Users\18716>java -version
'java' 不是内部或外部命令，也不是可运行的程序
或批处理文件。

C:\Users\18716>javac -version
'javac' 不是内部或外部命令，也不是可运行的程序
或批处理文件。
```

4. Editor

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

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.
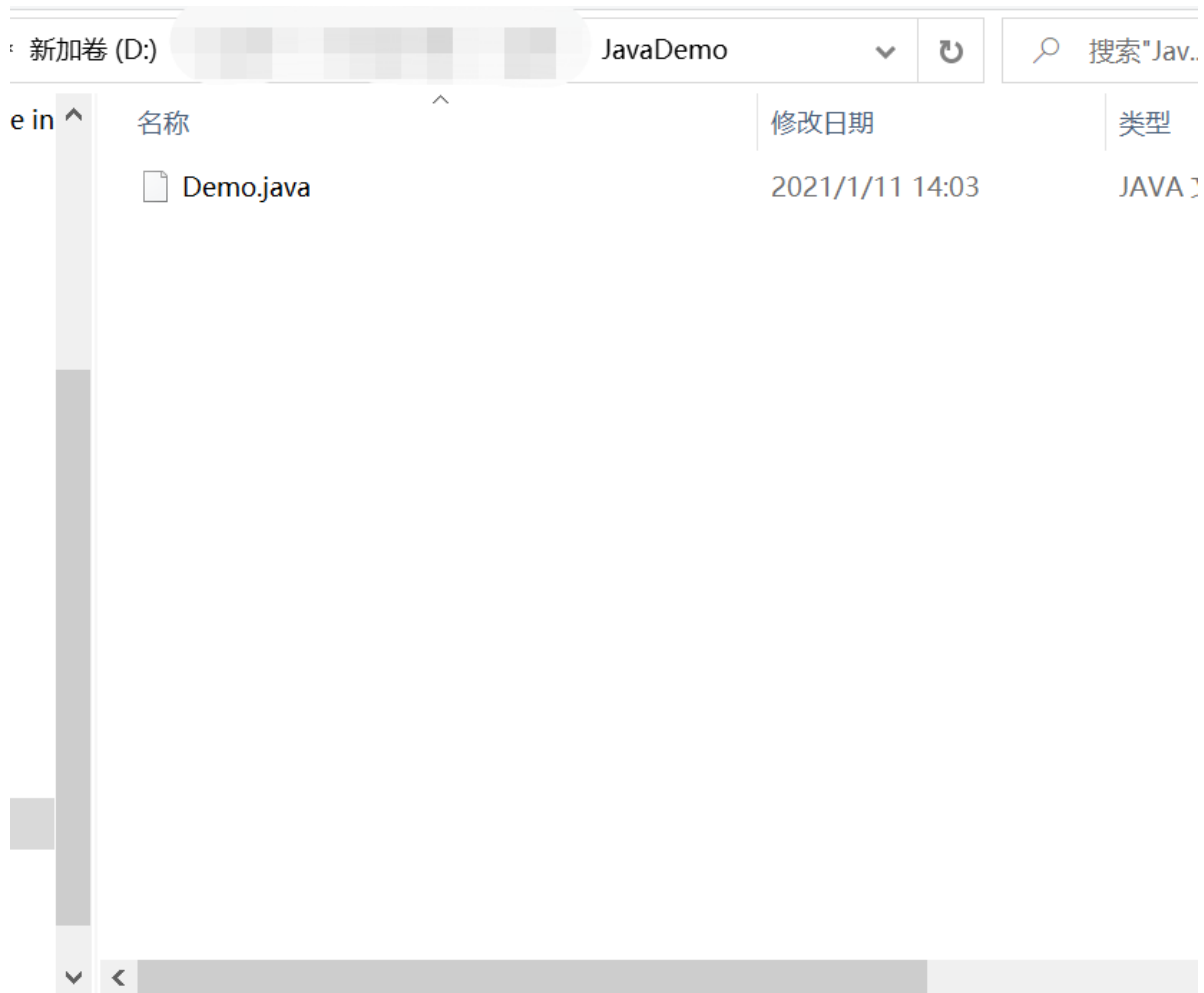
Exercise

Compile a Java Program in Command line

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

```java
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

```
D:\JavaDemo>javac Demo.java

D:\JavaDemo>java Demo
Hello, world!
```

Also, you may notice that a new file **Demo.class** has been produced. This file works when we run the command in cmd. The `java Demo` command still works inspite you delete the **Demo.java** file. However, it is not readable because it is a binary file.

Other Basic CMD:

- Change to d driver:

```
d:
```

- go into sub folder `xxx`:

```
cd xxx
```

- go into root folder:

```
cd /
```

- go into super folder:

```
cd ..
```

- find all files in current folder:

```
dir
```

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