

Basis of Computer Programming (java A)

Tutorial 1

[Experimental Objective]

1. Understand how to install JDK 9 or 10 and configure environment variable.
2. Practice the process of compiling and running java class in command line.
3. Learn how to use J shell to write and run a java class.

[Introduction for Lab]

1. **Lab exercise:** The content of lab exercise is according to the knowledge introduced in theory course last week. Normally, we provide 3 to 7 exercises per course in lab.
2. **Assignment:** The assignment is independent from the lab exercise and will be sent to you by Sakai or online Judge system. All of you should submit the assignment before the deadline.
There are at least 6 assignments in this semester.

Submission of Assignment:

- (1) What we want are the files saved with an extension of “.java”.
- (2) You should put all the “.java” files into one folder with the correct name, and then compress the document.
- (3) The format of homework name: StudentNumber_No
- (4) For example: “11810122_2” means the student number is “11810122” and it is the second assignment for him.
- (5) The homework should be submitted by using the SAKAI system
For the first three weeks of this semester, please join in the following sakai website.
<https://sakai.sustc.edu.cn/portal/directtool/05c7f4f4-0508-453b-ae6b-fe7a8d47cb12/>

At the beginning of the forth week, I will create a new site only for the students who selected my Lab course.

3. **Project:** Before the end of this semester, all of you should accomplish a project. The number of group members is 2-3. Normally, the project would account for 30% of course grade.
4. **Score Percentage:** (Assignment + Project): 50%; Quiz: 20%; Final Exam: 30%.

[Software Installation]

1. **JDK:** The Java Development Kit (JDK) is a software development environment used 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.

Download url:

<http://www.oracle.com/technetwork/java/javase/downloads/jdk10-downloads-4416644.html>

Java SE Development Kit 10.0.2

You must accept the [Oracle Binary Code License Agreement for Java SE](#) to download this software.

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Product / File Description	File Size	Download
Linux	306 MB	jdk-10.0.2_linux-x64_bin.rpm
Linux	338.43 MB	jdk-10.0.2_linux-x64_bin.tar.gz
macOS	395.46 MB	jdk-10.0.2_osx-x64_bin.dmg
Solaris SPARC	207.07 MB	jdk-10.0.2_solaris-sparcv9_bin.tar.gz
Windows	390.25 MB	jdk-10.0.2_windows-x64_bin.exe

Installation:

Once downloaded, run the executable. Follow the prompts to install the JDK. You'll need administrator access.

This assignment is designed to make sure that the Java compiler (JDK) 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) Then type, in order, the commands below.

java -version

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

```
C:\Users\Administrator>java -version
java version "10.0.2" 2018-07-17
Java(TM) SE Runtime Environment 18.3 (build 10.0.2+13)
Java HotSpot(TM) 64-Bit Server VM 18.3 (build 10.0.2+13, mixed mode)
```

2. Java Environment Variable:

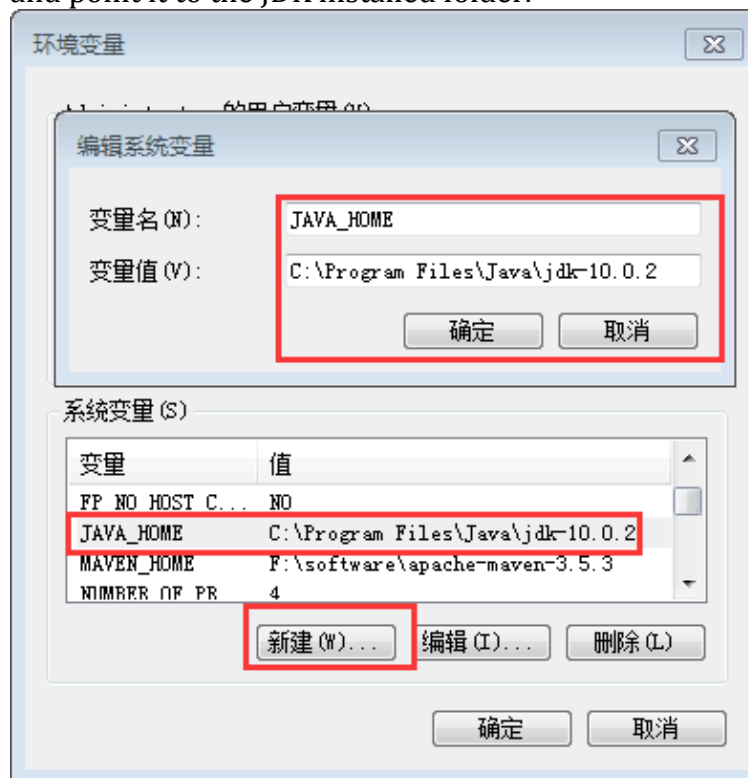
- a) JDK Installation: Double click the JDK Software, and install it according to the prompt.



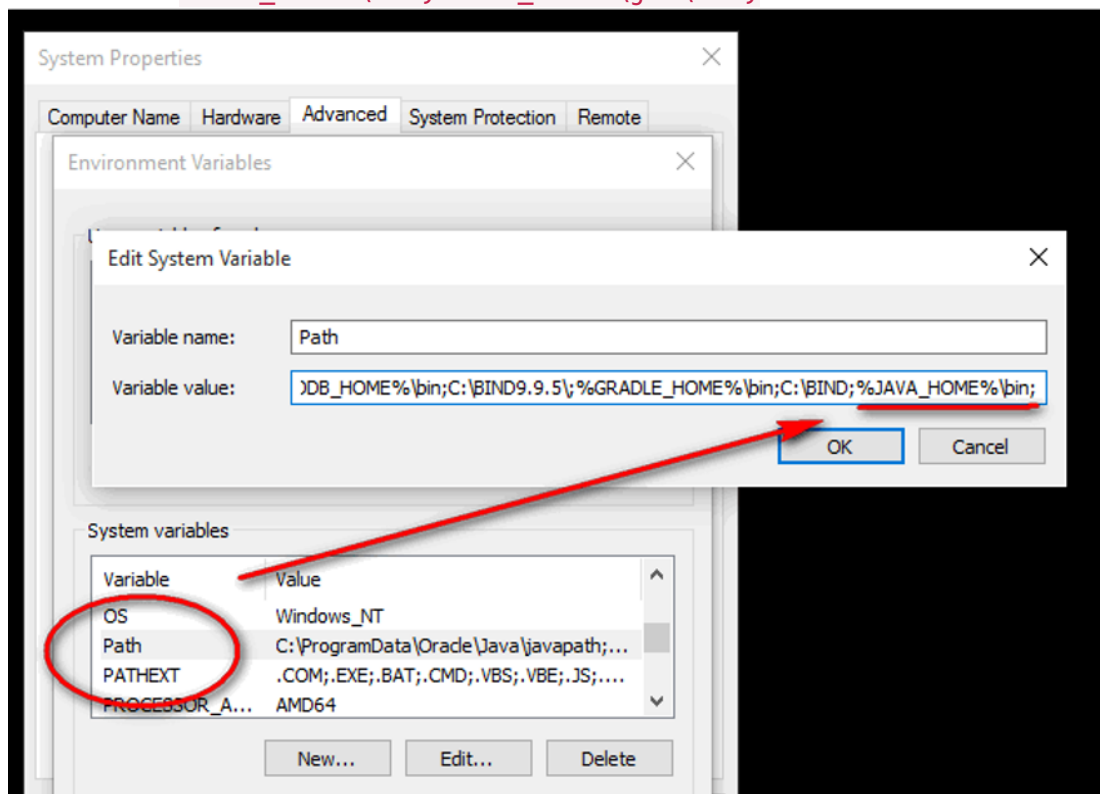
- b) Advanced System Settings: Type **advanced system settings** (高级系统设置) in the search box (beside the Windows start button), clicks **View advanced system settings**.



- c) Add JAVA_HOME: In System variables, add a new JAVA_HOME variable and point it to the JDK installed folder.



- d) Update Path: In System variables, find **PATH**, click edit and append this **%JAVA_HOME%\bin;%JAVA_HOME%\jre\bin;** to the end.



- e) Restart your computer.

f) Checking.

Open a terminal window or command prompt again, Then type, in order, the commands below.

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:

```
C:\Users\Administrator>javac -version
javac 10.0.2
```

However, if the JDK isn't installed, then you'll see an error like so:

```
C:\>javac -version
'javac' is not recognized as an internal or external command,
operable program or batch file.
```

3. Editor

(1) A simple Editor **Notepad++** is recommended for beginners (For windows system user)

Download url: <https://notepad-plus-plus.org/>

If your operation system cannot install Notepad, you can use **Sublime** instead.

Url: <https://www.sublimetext.com/3>

[Exercise]

1. Compile a Java Program in CMD

(1) Open the notepad program and create a new textfile and input the following code.

```
public class Demo{

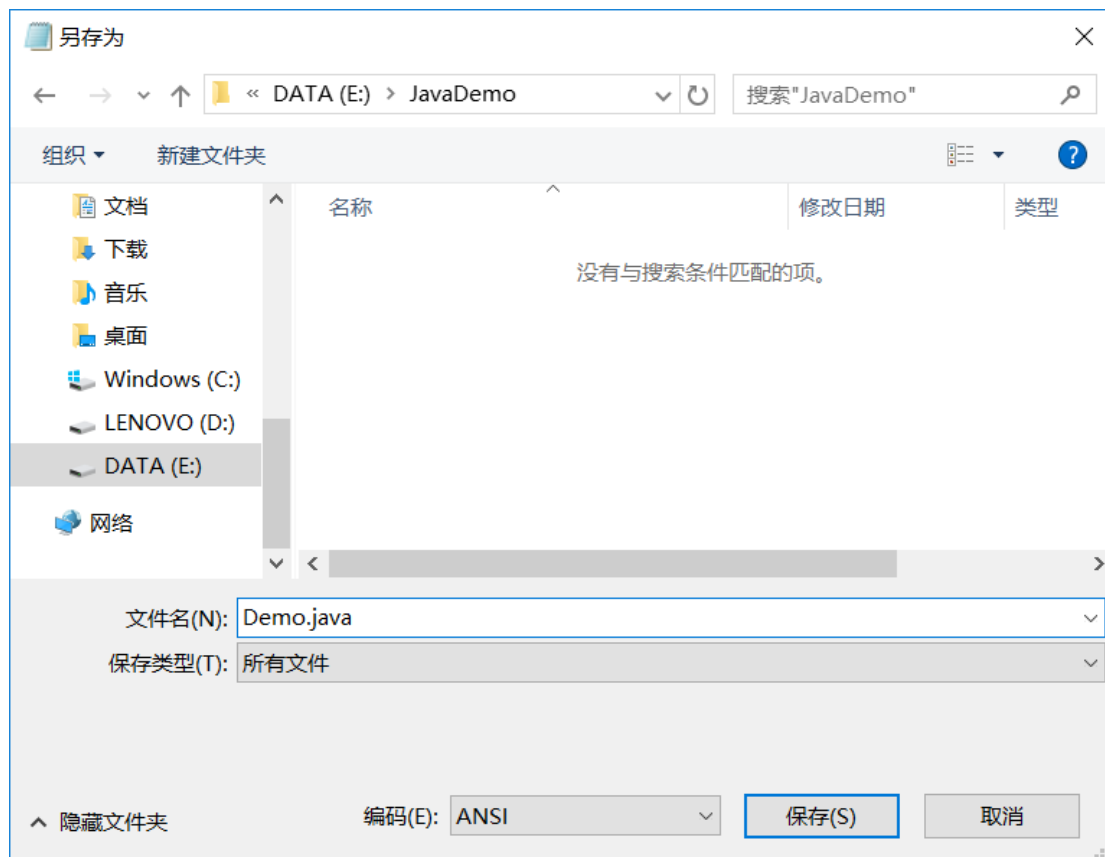
    public static void main(String[] args) {

        System.out.println("Hello, world!");

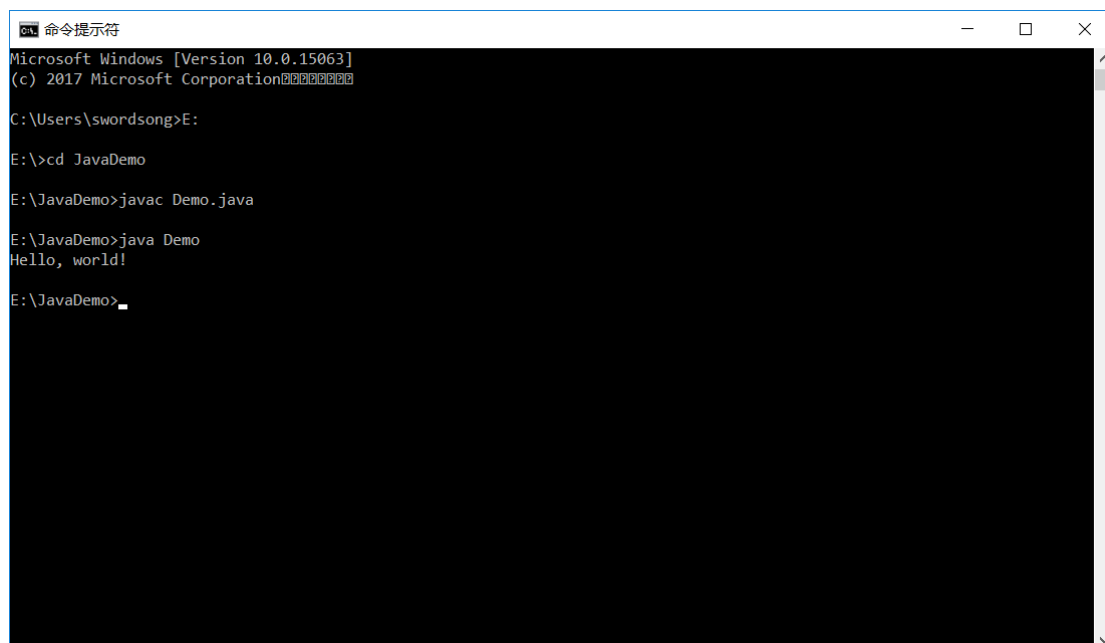
    }

}
```

(2) Using the “save as” command in the “File” menu to save the File with the name “Demo.java”



- (3) Open the cmd program; in the cmd window, use “cd” command to go to the directory of your java program; 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.

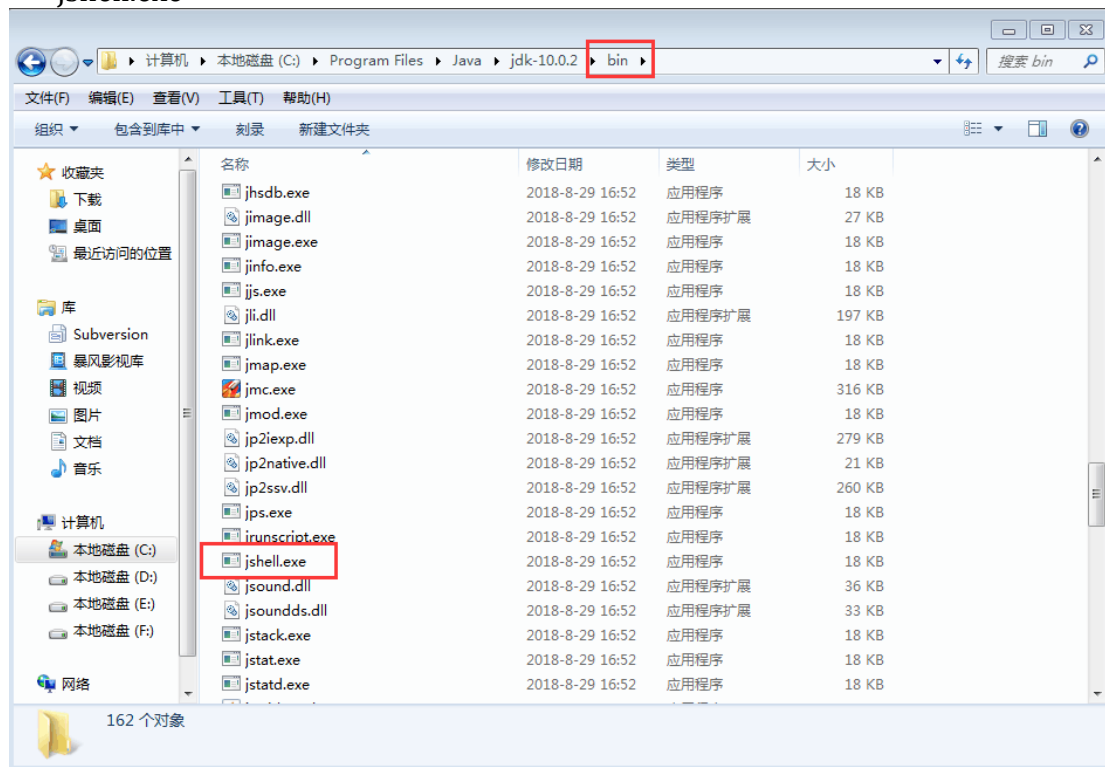


2. Using Jshell (Only for JDK 9 and JDK 10) to compile a Java Program.

(1) Open J shell:

Windows:

Go through your installation path of JDK, and then open bin folder and find jshell.exe



Mac OS:

Shift+command+G

Then typing in the path

/Library/Java/JavaVirtualMachines



And then finding your version of JDK, and the whole path would be as follows
/Library/Java/JavaVirtualMachines/jdk-9.jdk/Contents/Home/bin

(2) Compile a Java Problem

We can input a command directly without creating a class and a main method.

For example:

Typing: **System.out.println("Hello world");**

You will see the result:

```
jshell> System.out.println("Hello world");  
Hello world
```

[Assignment]

No assignment for the 1st class.