Basis of Computer Programming (java A)
Tutorial 1

[Experimental Objective]
1.   Understand how to install JDK 8 and configure environment variable.
2.   Practice the process of compiling and running java class in command line.

[Introduction for Lab]
1. **Lab exercise:** The content of lab exercise is prepared according to the knowledge introduced in lectures. Normally, we provide 3 to 7 exercises per lab.

2. **Assignment:** The assignment is independent from the lab exercise and will be sent to you by SAKAI. All of you should submit the assignment before the deadline.
    There will be 6 assignments in this semester.

Submission of Assignment:
(1) What we want are the files saved with an extension ".java".
(2) You should put all the ".java" files into one folder with the correct name in the format "StudentID_No". For example, if you are working on the second assignment and your student ID is 11810122, the folder should have the name "11810122_2".
(3) You should compress the folder into a .zip file and submit the file (for example, 11810122_2.zip) using the SAKAI system.
    https://sakai.sustc.edu.cn/portal/site/2eb780e5-b3a4-4fd7-a2c6-089ae5b3d342
(4) The assignment should be submitted before the deadline. Late submissions within 24 hours after the deadline (even a few minutes) will incur a 50% penalty, meaning that you can only get 50% of the score, which you could get if the assignment was submitted before the deadline.
(5) You should strictly follow ALL the above requirements.

3. **Project:** Before the end of this semester, all of you should accomplish a project. The number of group members is 2-3.

4. **Score Percentage:**
    lecture attendance and quizzes (10%)
    lab attendance and exercise (10%)

lab assignments (30%)

project (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 JDK 8u201 at the following url:

    https://www.oracle.com/technetwork/java/javase/downloads/jdk8-downloads-2133151.html

Java SE Development Kit 8u201

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 ARM 32 Hard Float ABI	72.98 MB	jdk-8u201-linux-arm32-vfp-hflt.tar.gz
Linux ARM 64 Hard Float ABI	69.92 MB	jdk-8u201-linux-arm64-vfp-hflt.tar.gz
Linux x86	170.98 MB	jdk-8u201-linux-i586.rpm
Linux x86	185.77 MB	jdk-8u201-linux-i586.tar.gz
Linux x64	168.05 MB	jdk-8u201-linux-x64.rpm
Linux x64	182.93 MB	jdk-8u201-linux-x64.tar.gz
Mac OS X x64	245.92 MB	jdk-8u201-macosx-x64.dmg
Solaris SPARC 64-bit (SVR4 package)	125.33 MB	jdk-8u201-solaris-sparcv9.tar.Z
Solaris SPARC 64-bit	88.31 MB	jdk-8u201-solaris-sparcv9.tar.gz
Solaris x64 (SVR4 package)	133.99 MB	jdk-8u201-solaris-x64.tar.Z
Solaris x64	92.16 MB	jdk-8u201-solaris-x64.tar.gz
Windows x86	197.66 MB	jdk-8u201-windows-i586.exe
Windows x64	207.46 MB	jdk-8u201-windows-x64.exe

Installation:

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

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

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Today's exercise 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, or type "cmd" at the search box. Type the following command:
 java –version
Then if it returns as following, you have installed it successfully.

2. Java Environment Variable:
    If you are a MacOS user, you can ignore environment variable in this lab.
    If you are a windows user, you need to do as following steps.
   a) 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`.

b) Add JAVA_HOME： In System variables, add a new JAVA_HOME variable and point it to the JDK installed folder.
(The following pic assumes JDK 10 is installed, find your equivalent JDK 8 folder)
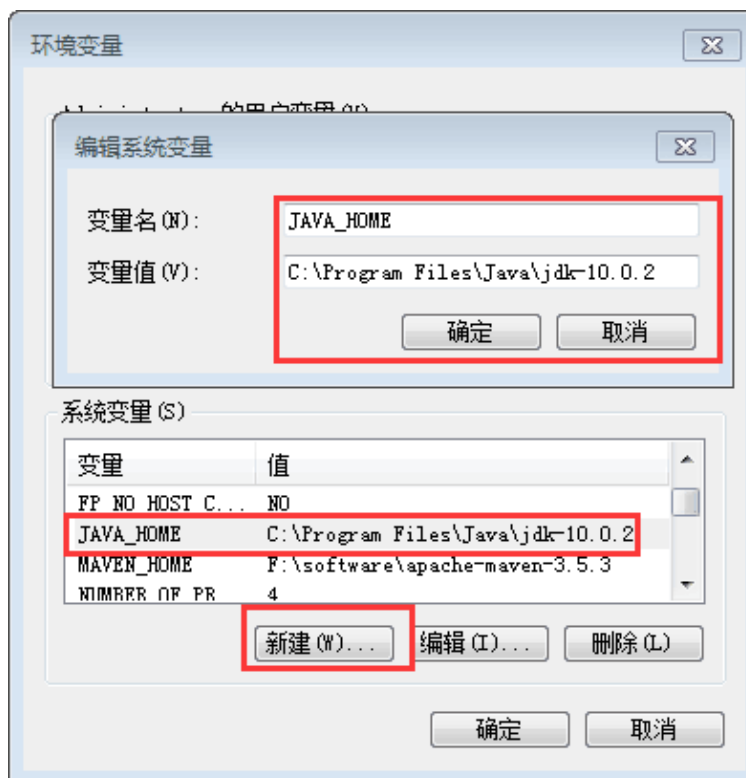
c) Update Path: In System variables, find `PATH`, clicks edit and append this `%JAVA_HOME%\bin` into the last line (windows 10 user).
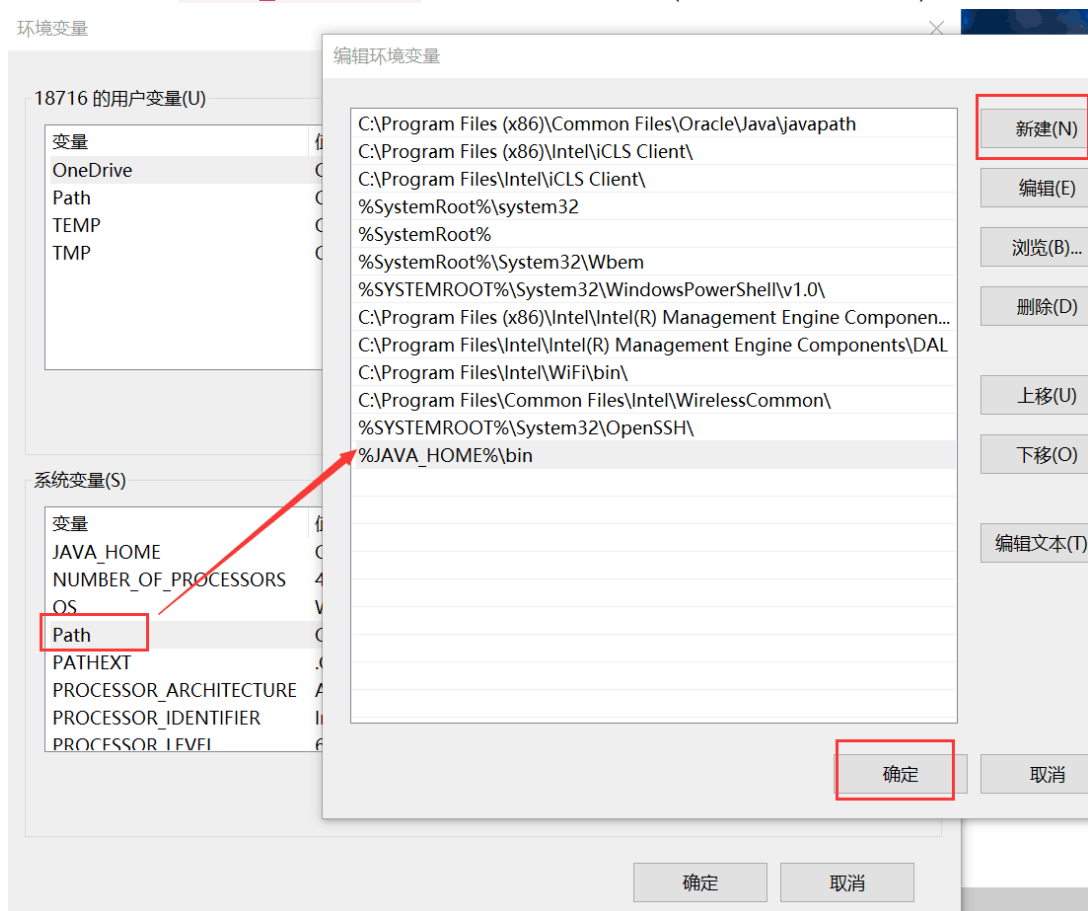
d) Restart your command prompt.
e) Checking.

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:

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

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3. Editor

A simple Editor **Notepad++** is recommended for beginners (For windows system user). For Mac users, **Visual Studio Code** is a good option.

Download Notepad++: https://notepad-plus-plus.org/

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

Or, you can simply use any text editor, for example **notepad** on windows and **TextEdit** on Mac.

[Exercise]
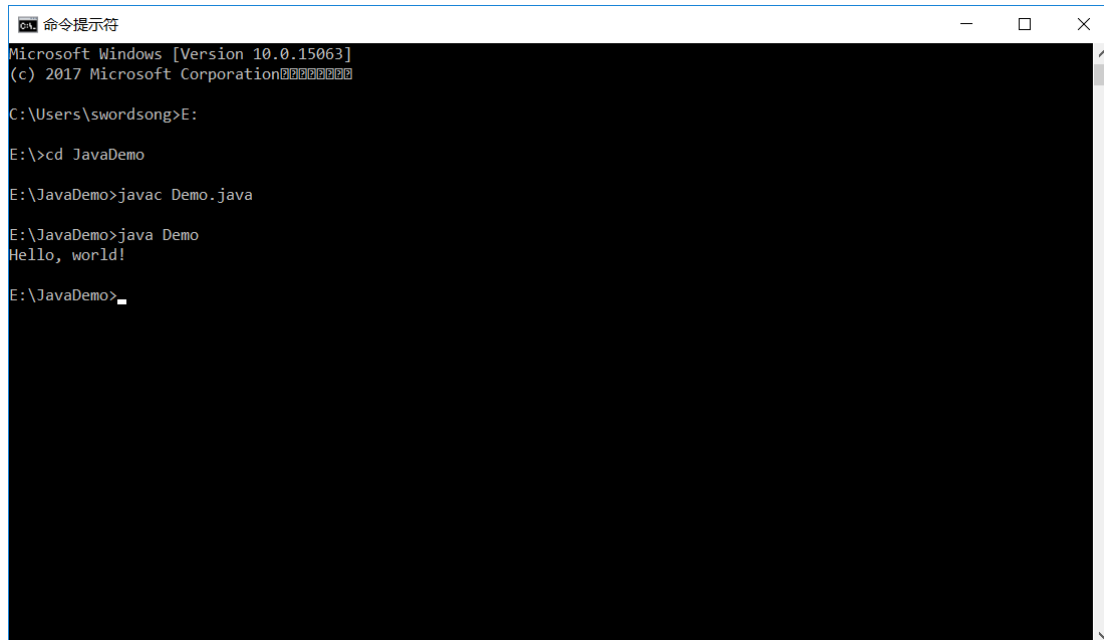
1. Compile a Java Program in CMD

(1) Open the notepad program and create a new text file 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". Note that the .java file name has to be the same as the main Class name in your program.
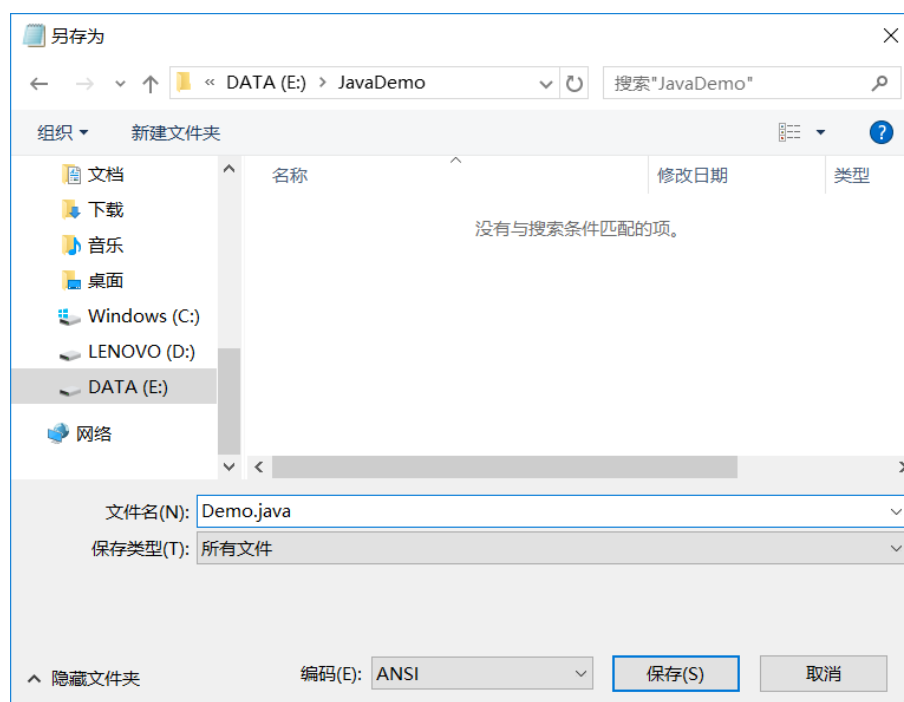
(3) Open the cmd program; in the cmd window, use "cd" command to go to the directory where you save your Demo.java; use javac command to compile your ".java" file; use java command to execute the .class file (which must have a main function). The procedure is as follows.

Now, you are using an editor and the compiler separately.

There are softwares (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 introduction of how to use IDEA would be introduced in following lab courses.

 [Assignment]

No assignment for the 1st class.

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