

CS210 Java Tutorial: Getting Started

You have many choices for programming in Java. There are countless good IDEs (Integrated Development Environment) to choose from, many are even free! Just to name a few: NetBeans, Eclipse, IntelliJ IDEA (Community Edition), BlueJ... For the purpose of this course, any IDE will be good enough, so feel free to choose the one that you like most.

In this tutorial, I'm going to cover two IDEs (you can choose either one to read / follow):

1. NetBeans: personally I like it the most, but your miles may vary :)
2. Eclipse: this is very widely used in industry, our school's computer lab also has it setup.

Of course, you could go with the "hard" way -- without IDE, just use a text editor together with command line java tools. Although it's less convenient, you could learn more about what's going on "behind the scenes", so I'll briefly cover it in the last section. This is purely optional, so feel free to skip it.

Step 0: Download the skeleton .java file

You can certainly start your programming from scratch, but for almost all assignments in this course, we are going to start from a skeleton .java file. So please go ahead and download one, for example, for HW0, you need to download HelloCS210.java, for the rest of the tutorial, I'm going to assume that you saved it as:

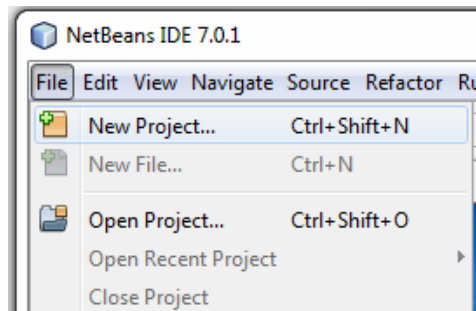
D:\Downloaded\HW0\HelloCS210.java

Now you can choose to read / follow any one of the following three ways (or all of them, if you like to :)

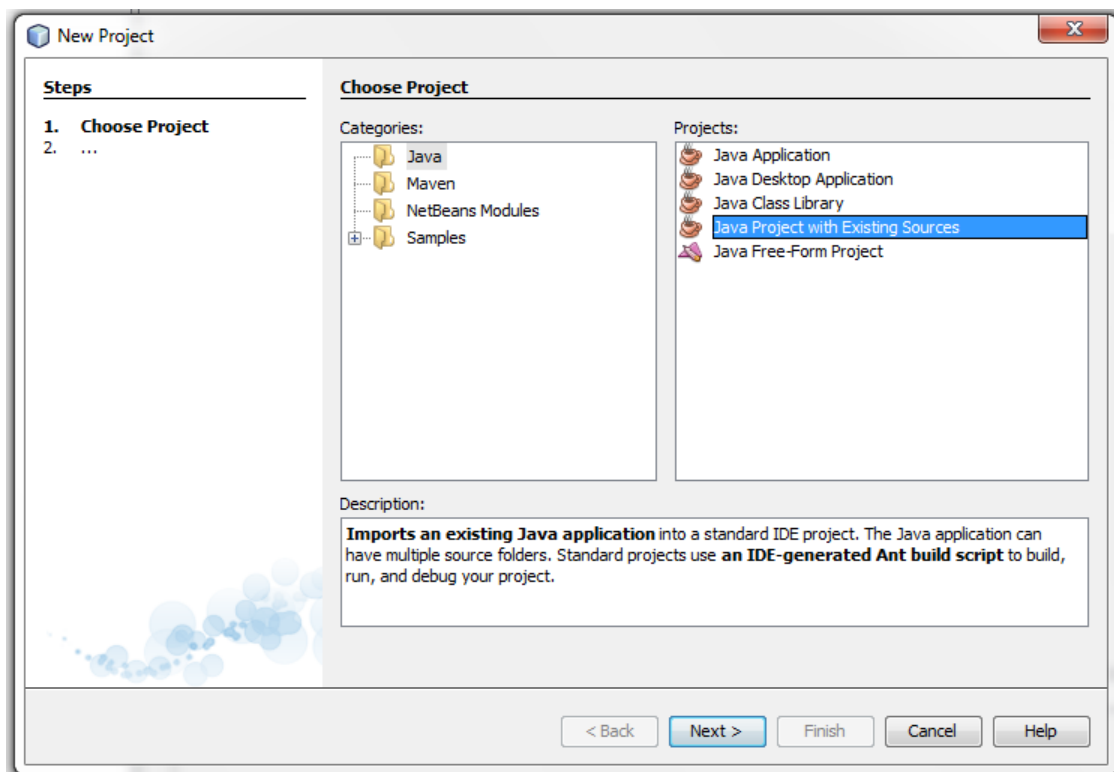
Way 1: NetBeans IDE

First, you need to download and setup both JDK (Java Development Kit) and NetBeans. You could do them separately, but the most hassle-free way is to download and setup the bundle: <http://www.oracle.com/technetwork/java/javase/downloads/jdk-netbeans-jsp-142931.html>

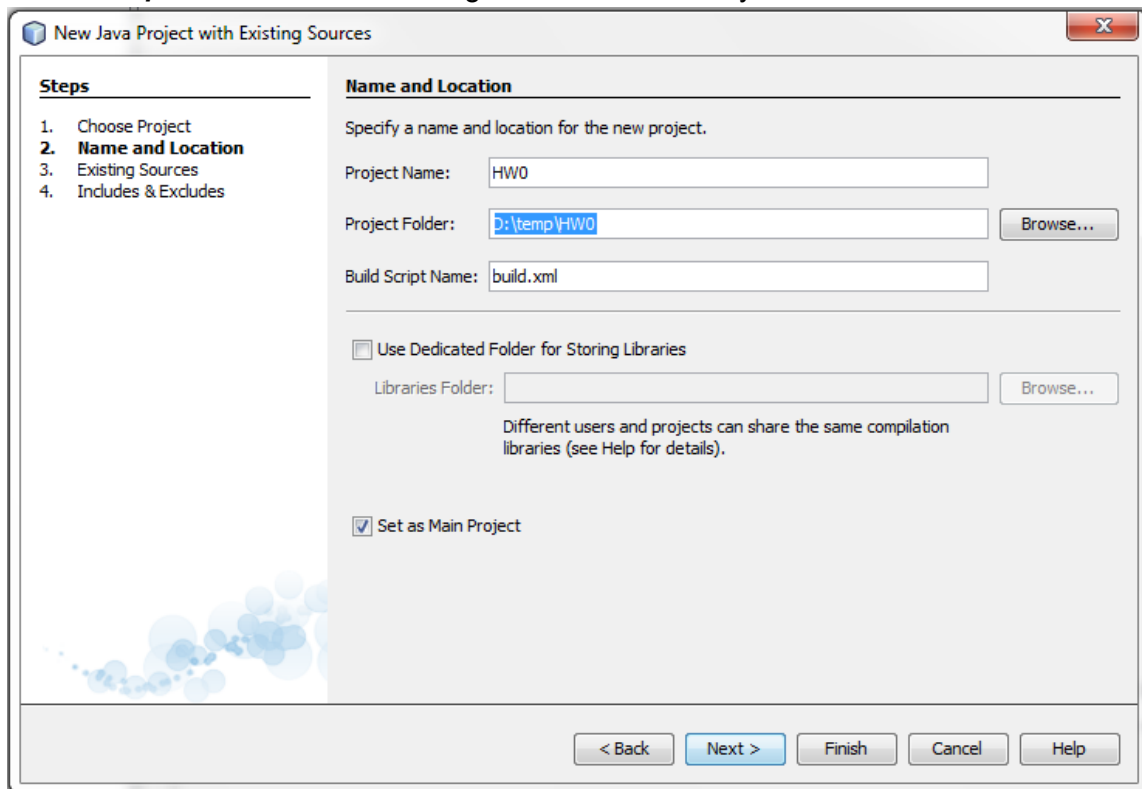
Now start up NetBeans, choose “File -> New Project”, or press “Ctrl + Shift + N”:



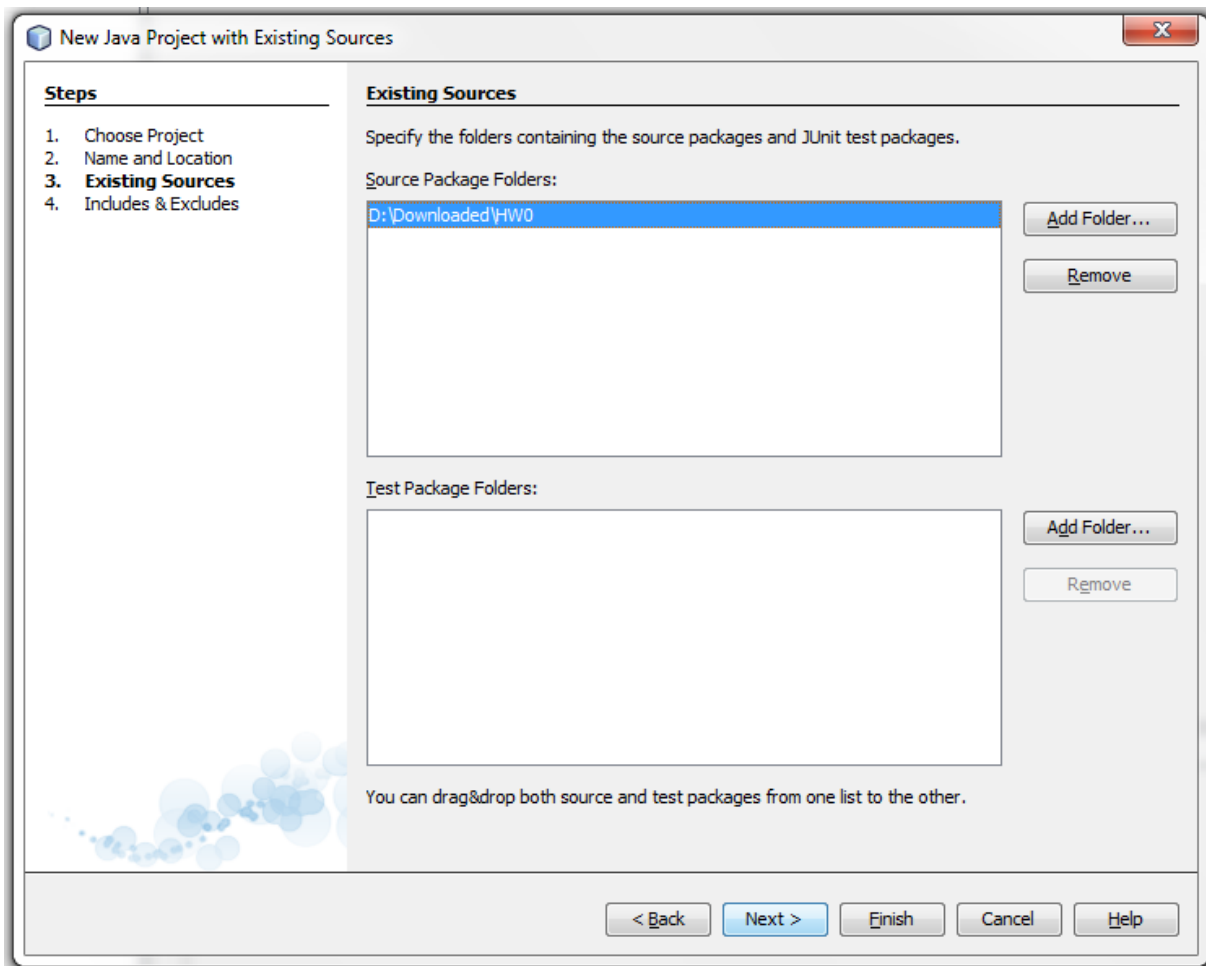
You will see a window pop up. Select “Java”, “Java Project with Existing Sources”, then click “Next”:



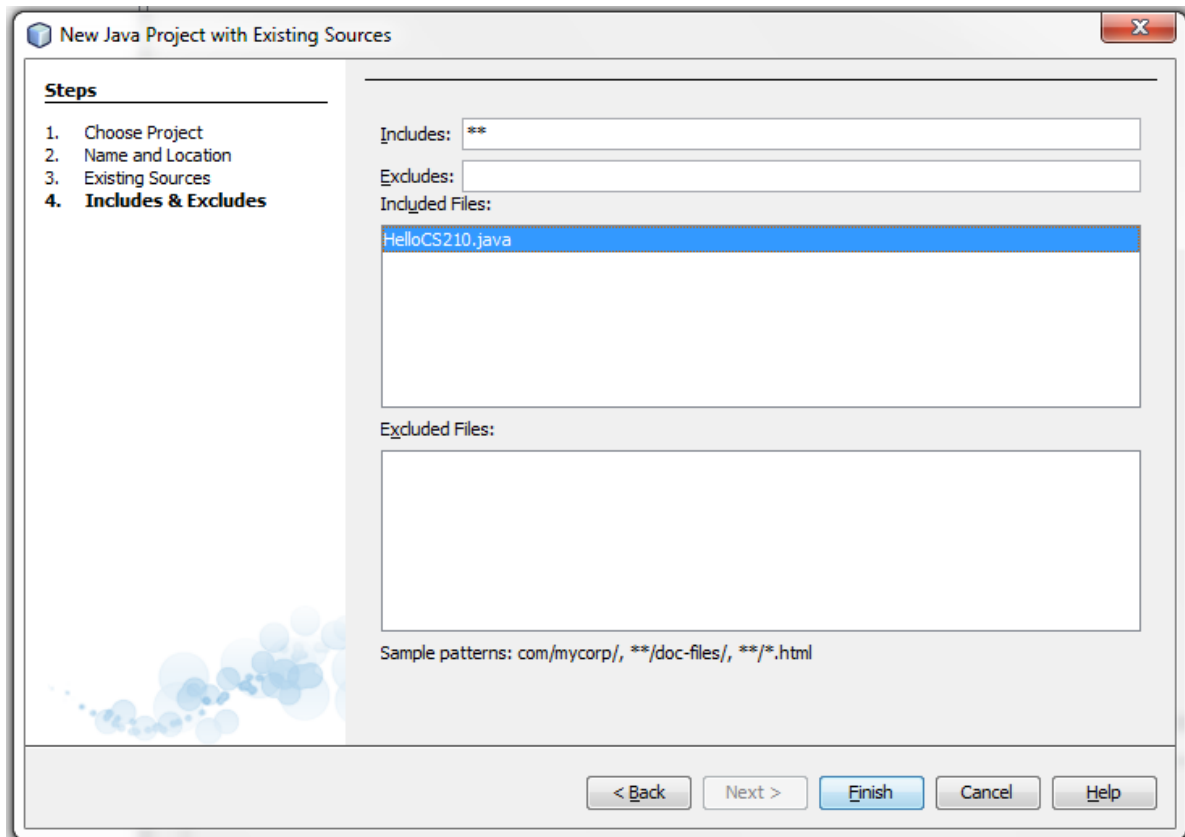
Give your project a name, here I chose “HW0”; and select a folder to save your project, here I use *D:\temp\HW0*. Feel free to change them to whatever you like. Click “Next”:



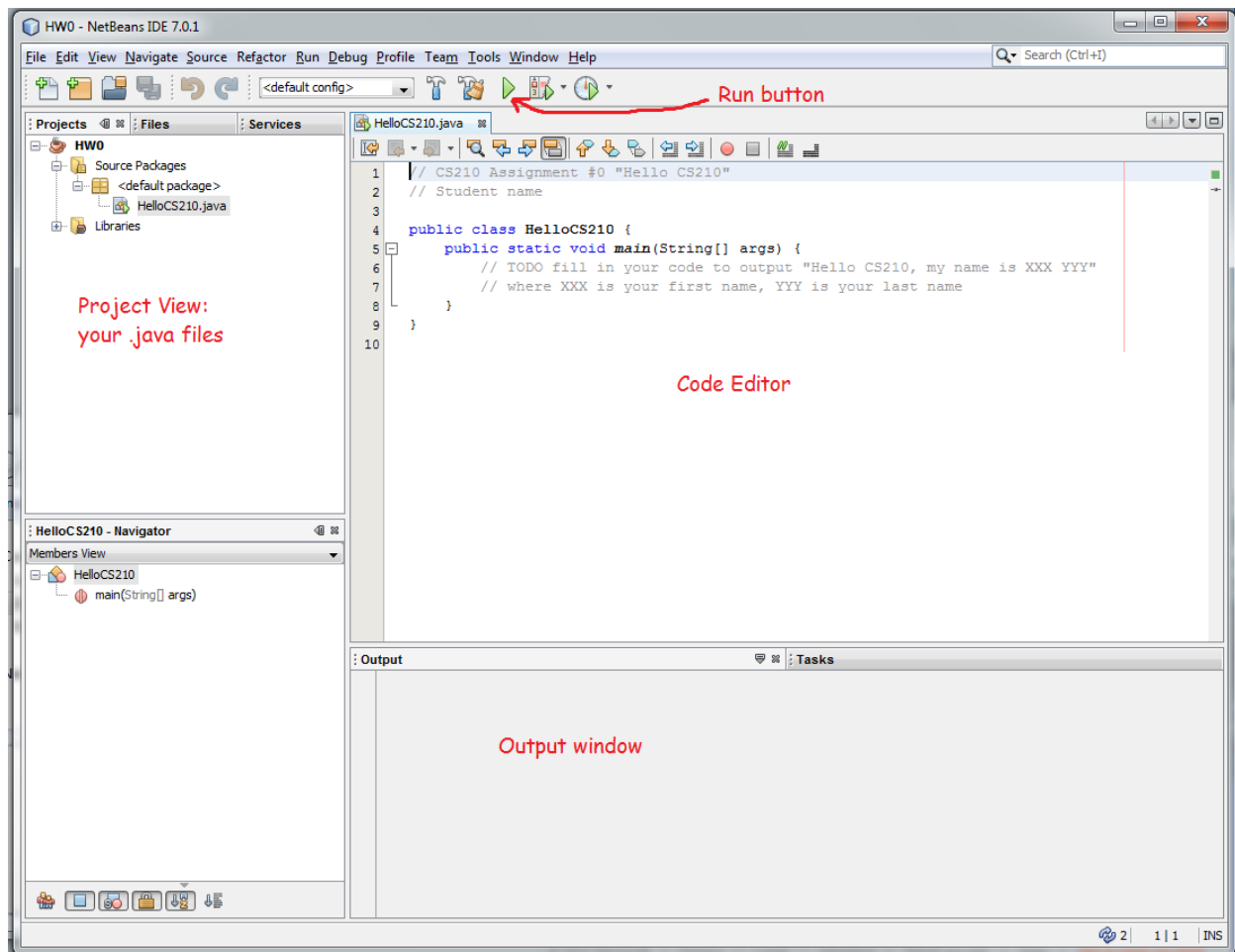
Now you need to tell NetBeans where your skeleton .java file is. Click “Add Folder...”, and navigate to where your downloaded .java file resides **D:\Downloaded\HW0**. Click “Next”:



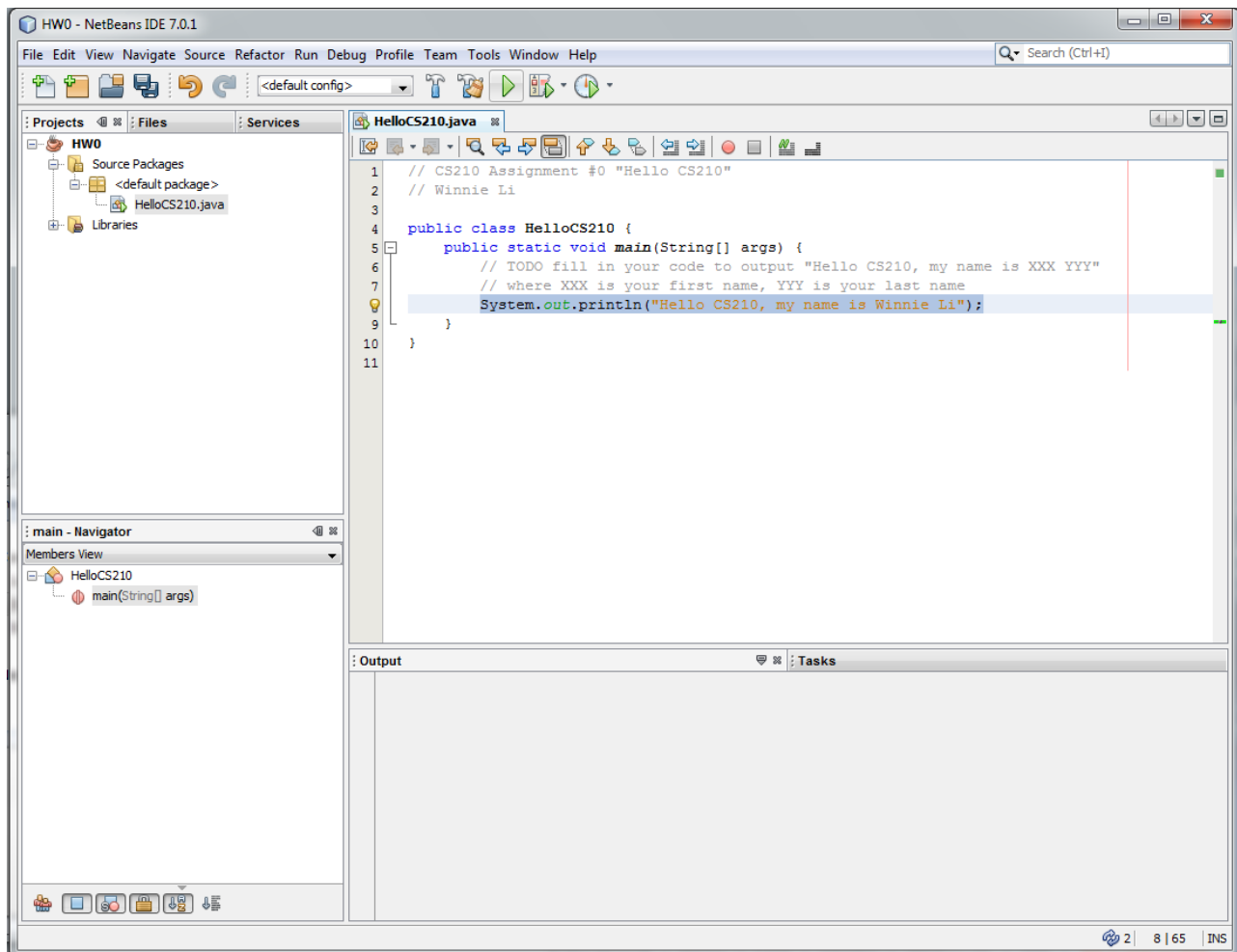
Then you can verify that it correctly finds “***HelloCS210.java***”. Click “Finish”:



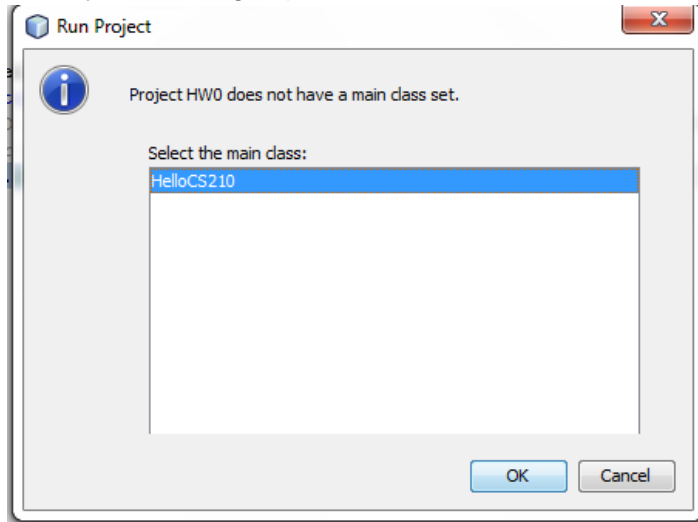
Now you will see the IDE environment. On the left is the Project View, where you can see all your .java files in a “tree-like” structure. Double click your .java file will open it up on the right side Code Editor. At the right bottom is the output window, when you run the program, any output will be shown here. Notice that under the menu bar, there are several buttons, we will be using the “green arrow” Run button shortly.



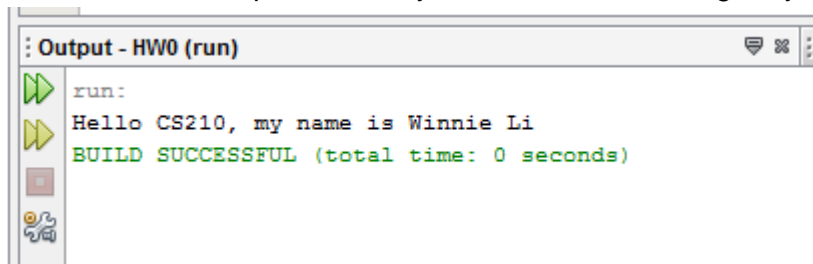
Now edit the code, type in a `println` statement, similar to the one shown below:



It's show time -- let's run the program! You can either click the Run button, choose "Run -> Run Project" from the menu, or just press "F6". Since this is the first time you run the project, you need to confirm the main class by clicking "OK" (this is just a one-time thing, you won't see this when you run it again):



Now look at the output window, your `println` is working. Yay!!!



Congratulations! You've just successfully run your first Java program!

Finally, let's add a summary in the header and modify the default comment `//TODO...`

Note that the change you made has been directly saved to ***D:\Downloaded\HW0\HelloCS210.java***

Way 2: Eclipse IDE

First, you need to setup JRE (Java Runtime Environment), most likely you will have it already on your machine. If not, download and set it up:

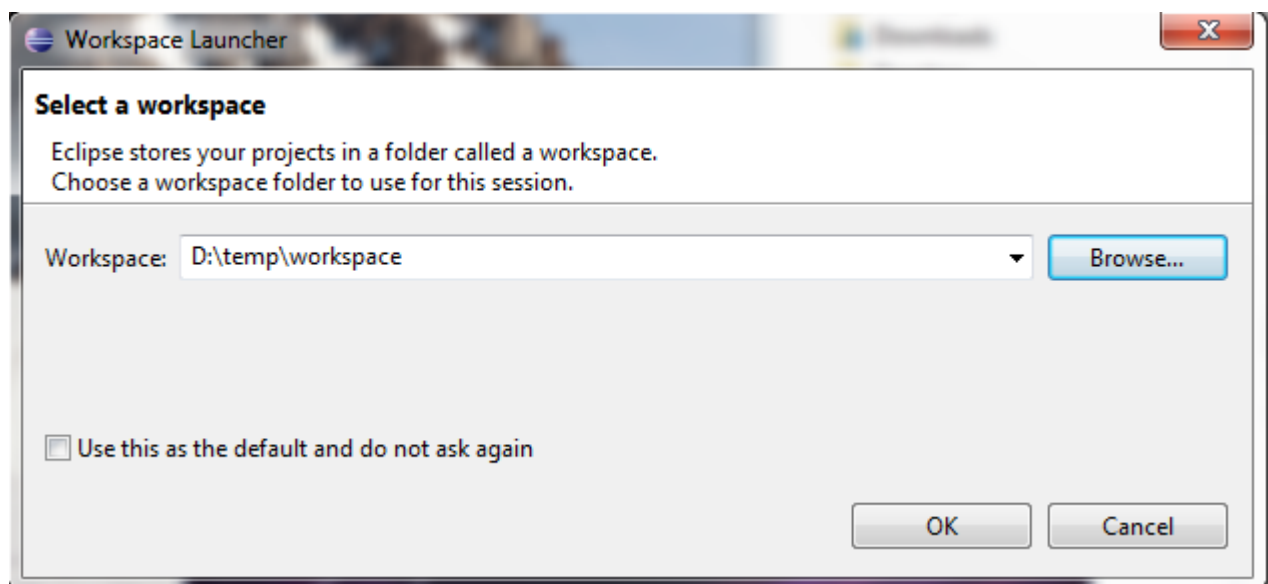
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

Now download “Eclipse IDE for Java developers”:

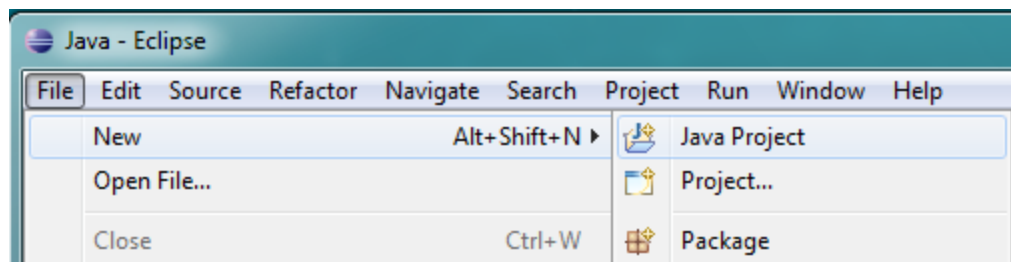
<http://www.eclipse.org/downloads/>

It's a zip file, just unzip it anywhere you want and double click “eclipse.exe” to run it.

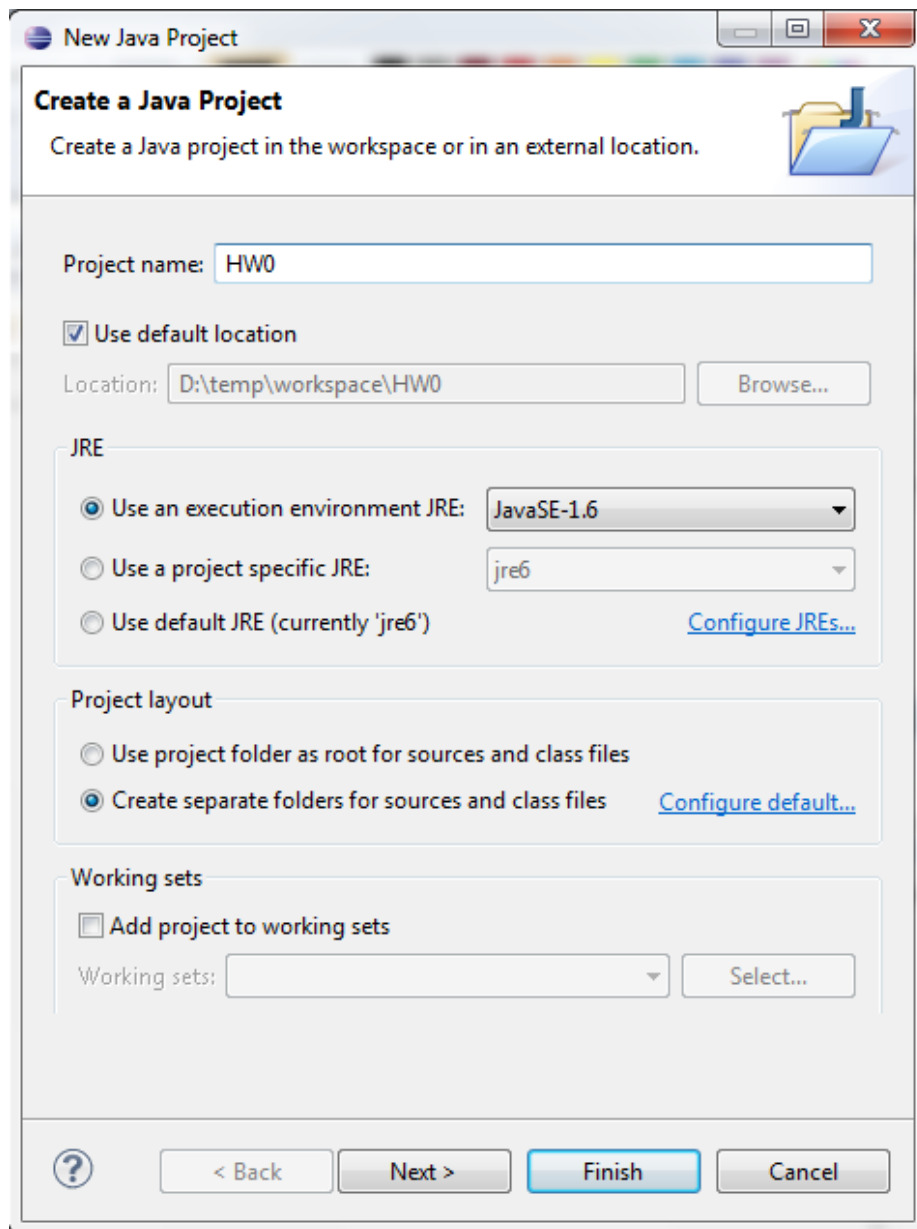
First thing is that you need to choose a “workspace”, which is a folder to store all your projects. Here I use **D:\temp\workspace**, you can choose wherever you want. Click “OK”:



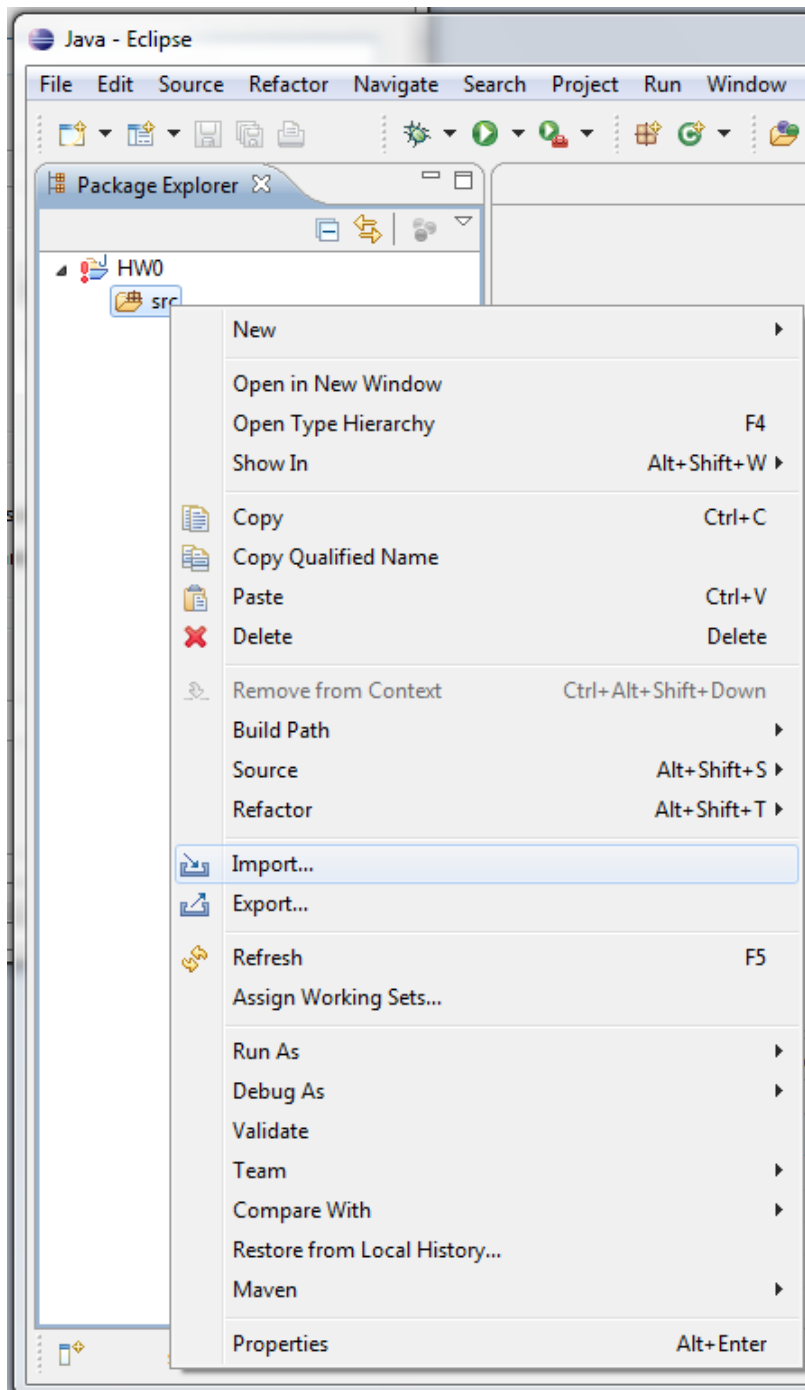
Choose “File -> New -> Java Project”:



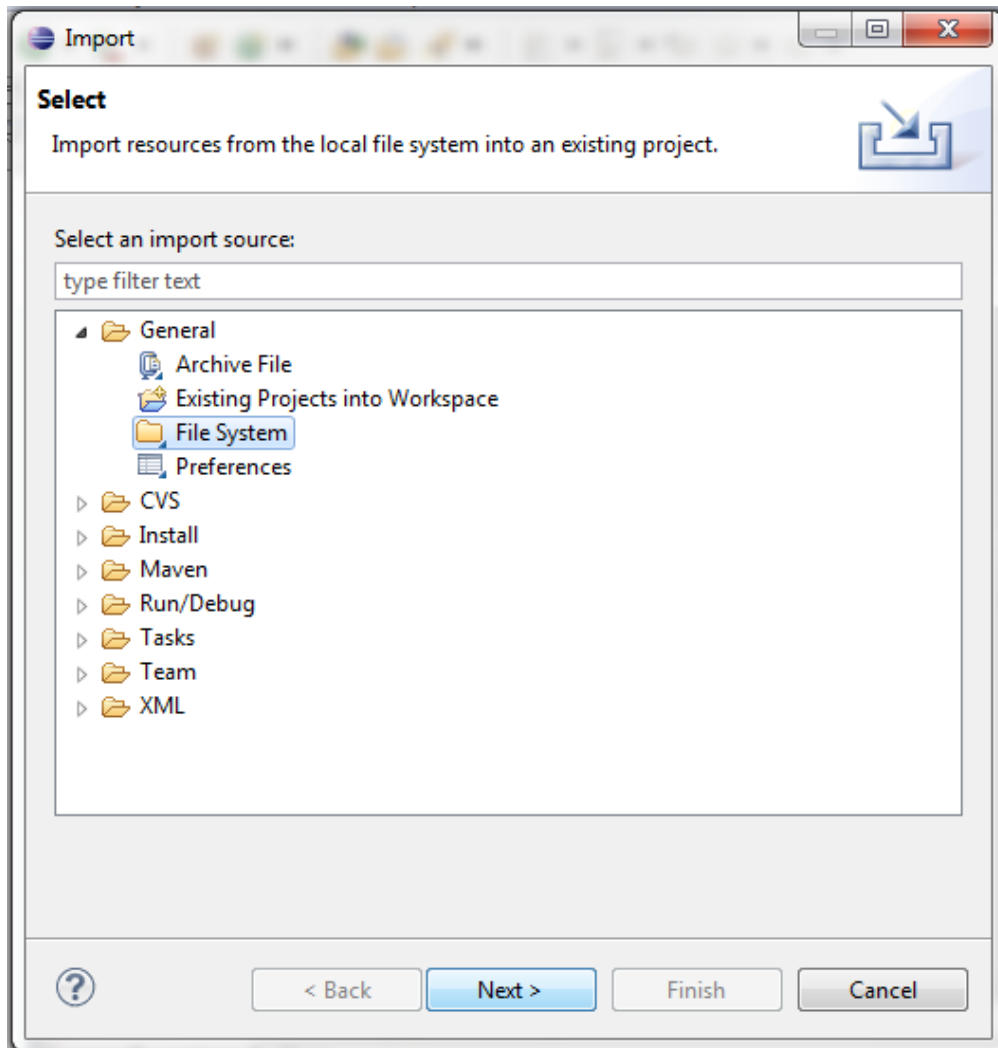
Give your project a name, here I use “HW0”. Again, feel free to change to whatever you want. Click “Finish”:



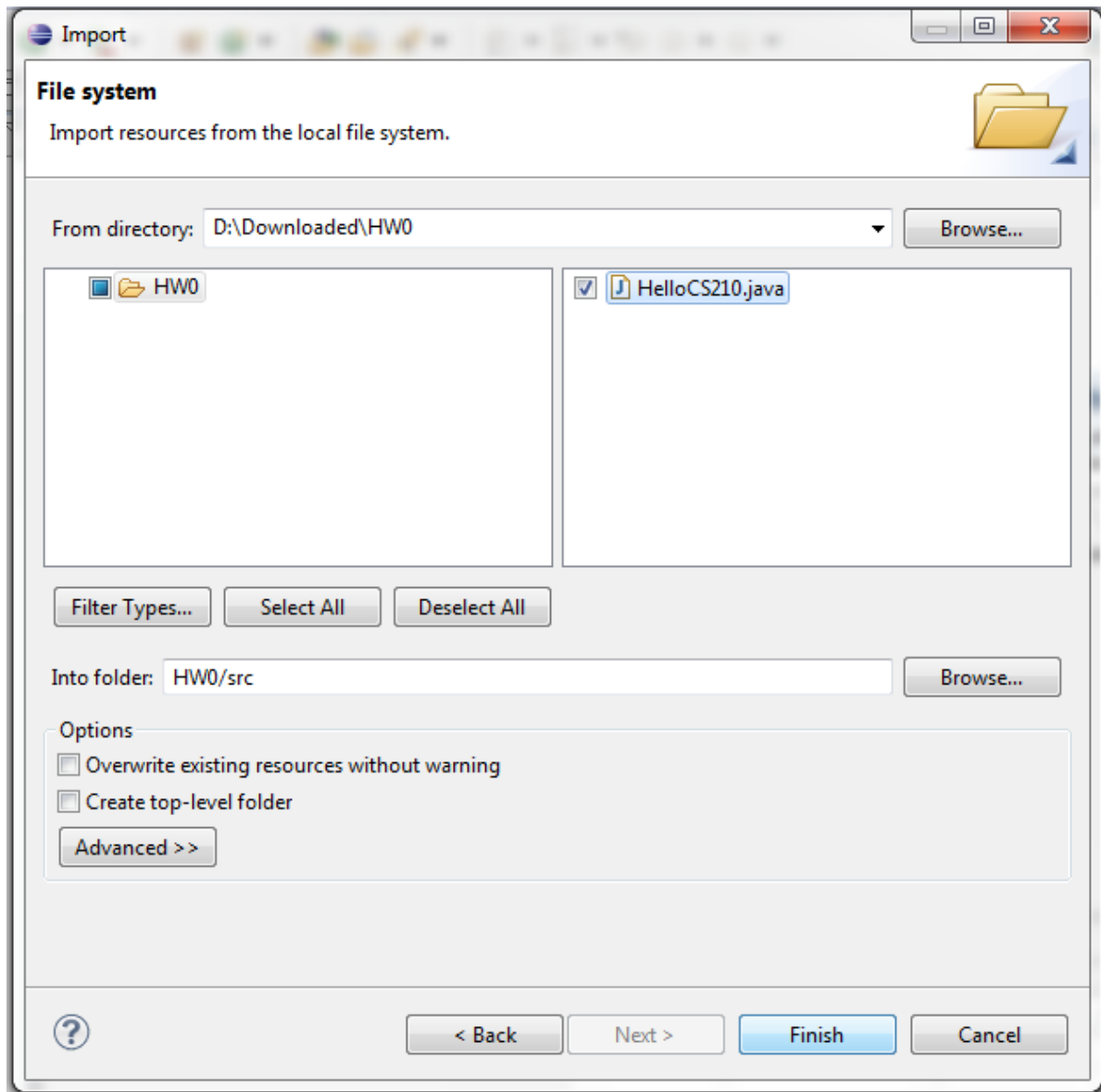
Now you need to tell Eclipse where your skeleton .java file is. Expand HW0 (by clicking the little triangle on the left), right click on “src”, and choose “Import...”:



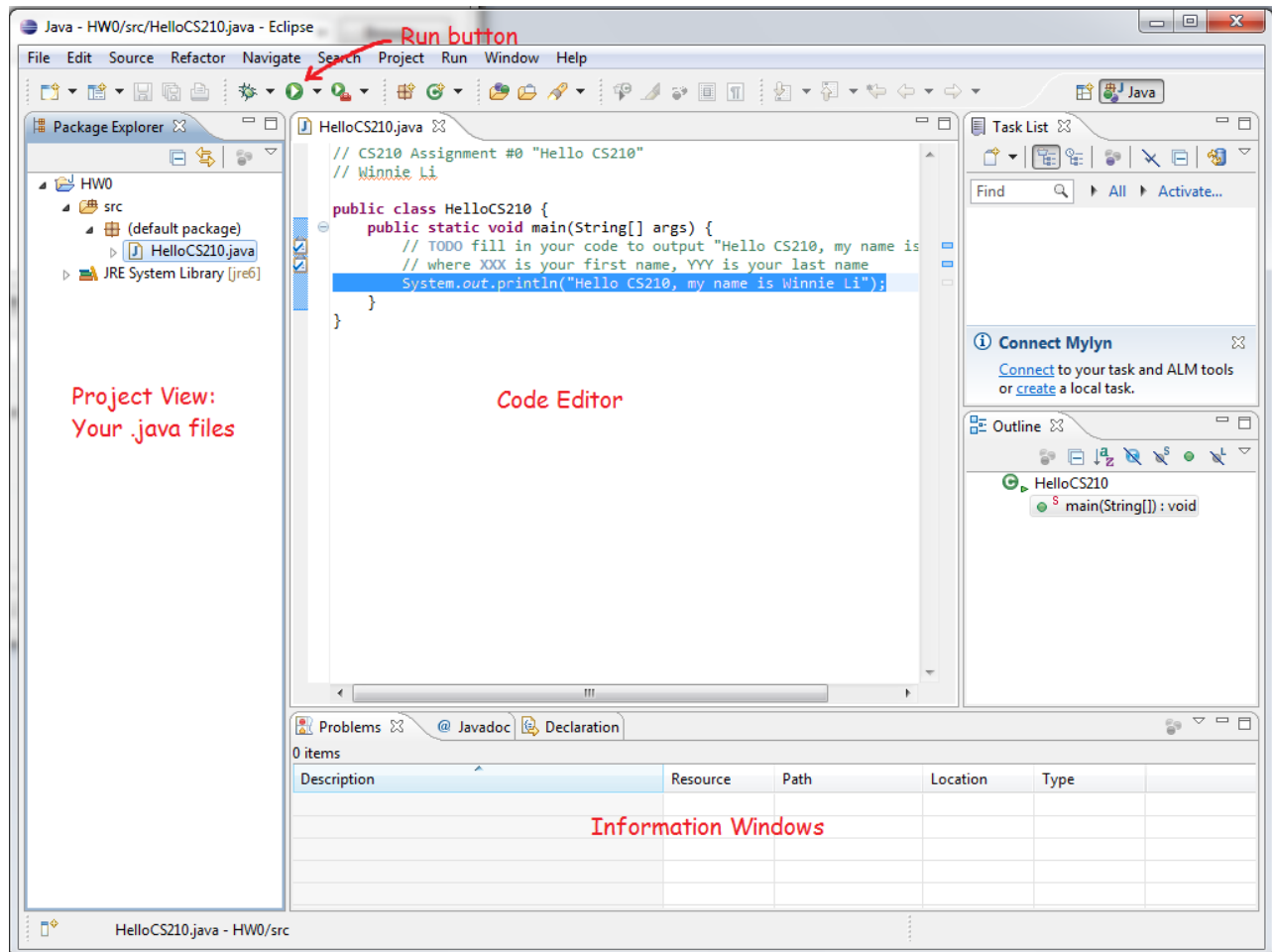
Then expand “General”, choose “File System”, then click “Next”:



Then choose the directory where your downloaded .java file resides **D:\Downloaded\HW0**, and check the check box for “HelloCS210.java”, click “Finish”:

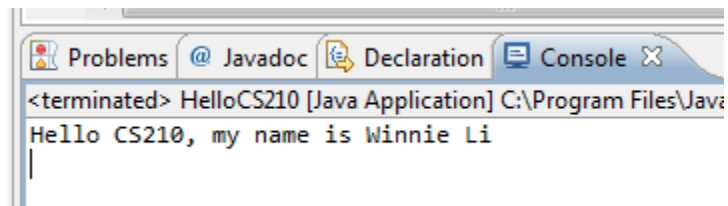


Now you will see the IDE environment. On the left is the Project View, where you can see all your .java files in a “tree-like” structure. Double click your .java file will open it up on the middle part Code Editor. At the right bottom are several information windows, when you run the program, one of them will show the console output. Notice that under the menu bar, there are several buttons, we will be using the “green arrow” Run button shortly.



Now edit the code, type in a `println("...")` statement, similar to the one shown above.

Now let's run the program! You can either click the Run button, choose "Run -> Run" from the menu, or just press "Ctrl + F11". You will see the console output on the bottom:



Congratulations! You've successfully run your java program!

Finally, let's add a summary in the header and modify the default comment `//TODO...`

Note that the change you made is **NOT** directly saved to ***D:\Downloaded\HW0\HelloCS210.java*** but to a copy at ***D:\temp\workspace\HW0\HelloCS210.java***

Way 3: Text Editor with Command Line Tools

Warning: below is a little hard-core :)

First, you need to setup JDK (Java Development Kit). You can download and set it up here:
<http://www.oracle.com/technetwork/java/javase/downloads/index.html>

Next, you need to tell command line where the Java Tools are. Open up a command line window (for example, in Windows 7, click the Windows button, type “cmd” in the search box, and hit Enter to run cmd.exe). Then essentially you need to setup the “path” environment variable. In the command line, type:

```
set path=%path%;C:\Program Files\Java\jdk1.6.0_27\bin
```

Note that depending on your installation path of JDK, the above might need to be changed to match with your setup.

You can check if it worked by typing:

```
javac -version
```

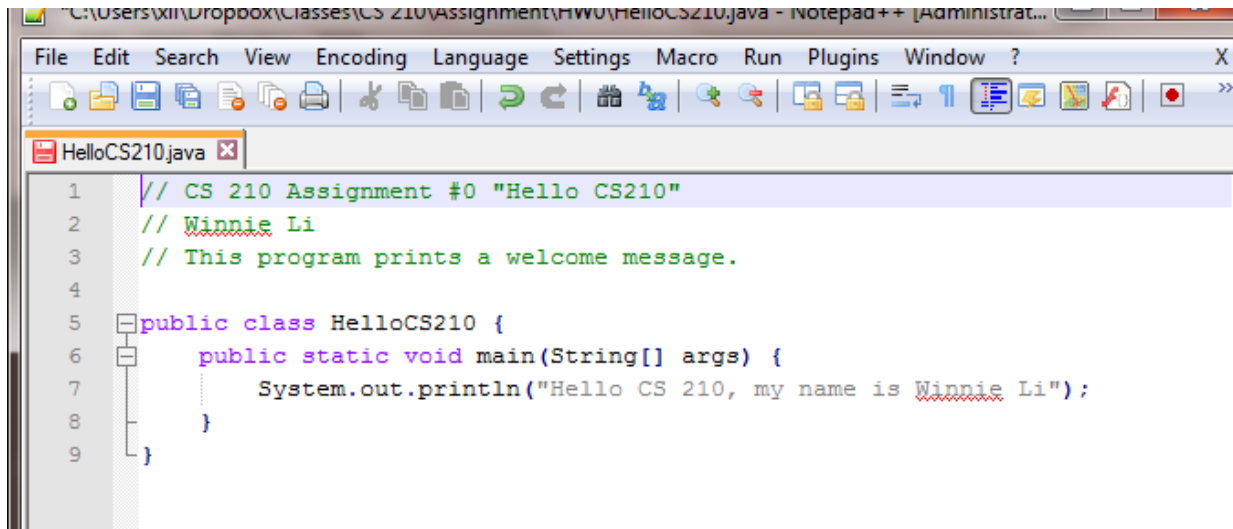
It should show something like `javac 1.6.0_27`. You can also check:

```
java -version
```

It should show something like `java version "1.6.0_27"...`

Now all setup work is done, you are good to starting coding.

Go to the directory where your downloaded .java file resides **D:\Downloaded\HW0**. You can use your favorite text editor to edit the java source file “HelloCS210.java”, even the NotePad in Windows will do. However, you won’t have syntax highlighting there. Many modern text editors are quite sophisticated, and are able to highlight the syntax for you, which is a big plus. My favorite is Notepad++ (which, of course, is also a free software :) <http://notepad-plus-plus.org/>



```
1 // CS 210 Assignment #0 "Hello CS210"
2 // Winnie Li
3 // This program prints a welcome message.
4
5 public class HelloCS210 {
6     public static void main(String[] args) {
7         System.out.println("Hello CS 210, my name is Winnie Li");
8     }
9 }
```

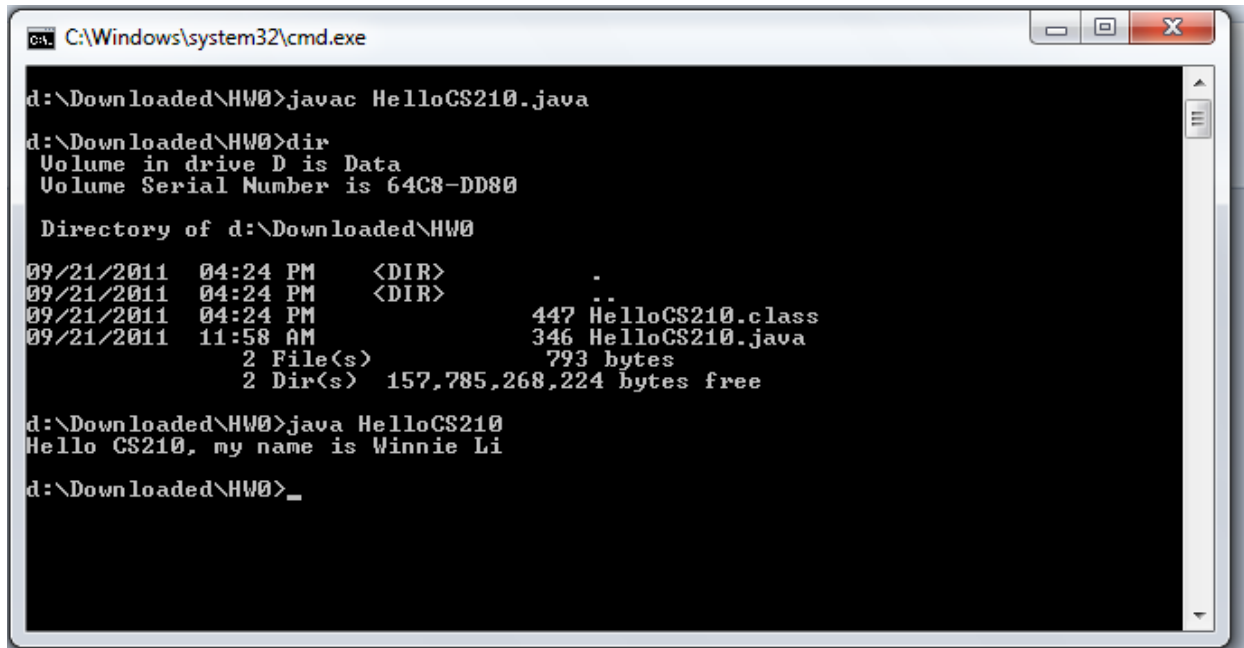
Save your edit, then in the command line, type:

```
javac HelloCS210.java
```

This is to invoke the java compiler “javac”, it will compile the “HelloCS210.java” file and produce the “HelloCS210.class”, which is a compiled java class file. To run it, type:

```
java HelloCS210
```

Notice that you should omit the .class suffix. Now the output is shown to you in the command line:



```
C:\Windows\system32\cmd.exe

d:\Downloaded\HW0>javac HelloCS210.java

d:\Downloaded\HW0>dir
Volume in drive D is Data
Volume Serial Number is 64C8-DD80

Directory of d:\Downloaded\HW0
09/21/2011  04:24 PM    <DIR>          .
09/21/2011  04:24 PM    <DIR>          ..
09/21/2011  04:24 PM                447 HelloCS210.class
09/21/2011  11:58 AM                346 HelloCS210.java
                2 File(s)                793 bytes
                2 Dir(s)  157,785,268,224 bytes free

d:\Downloaded\HW0>java HelloCS210
Hello CS210, my name is Winnie Li

d:\Downloaded\HW0>_
```

Congratulations! You just did it!