Introduction to Eclipse

To install this lab type the following script into the terminal:
`cs015_install lab0`

When you finish the lab, you'll hand in the assignment by typing:
`cs015_handin lab0`

In your first few programs your code will be short and simple. However, as your programs get more complicated and you have more classes to deal with, it will be helpful to have additional tools to help you develop your programs. One such tool is an “Integrated Development Environment” (IDE). An IDE is a software application that makes coding easier. A good IDE will drastically increase your efficiency. A very popular (and free) Java IDE is Eclipse; Eclipse is very powerful, some might even say *godlike.*

Eclipse has many amazing features that will soon become second nature to you. For example, Eclipse will automatically compile your code as you type. So if you leave out a semicolon, Eclipse will let you know immediately. Another useful feature in Eclipse is "code hinting." As you type the name of a method, Eclipse will populate all the possibilities based on what you've typed so far. This means you won’t have to navigate to other files to check what the exact method signature is, which can be very helpful for large programs.

Another nice feature is access to a debugger, which you’ll learn later once you’re more familiar with Eclipse.

Becoming comfortable and proficient with Eclipse will not only help you in CS0150, but also in your future CS courses and industry jobs - many, many, many companies use Eclipse for writing Java code. In this lab, you'll be setting up Eclipse and then writing a very simple program.

Setting up a project in Eclipse can be a bit confusing (and frustrating) the first few times, so we are going to walk you through it step-by-step. The additional time spent setting things up will definitely be “eclipsed” by the time you save through using Eclipse.

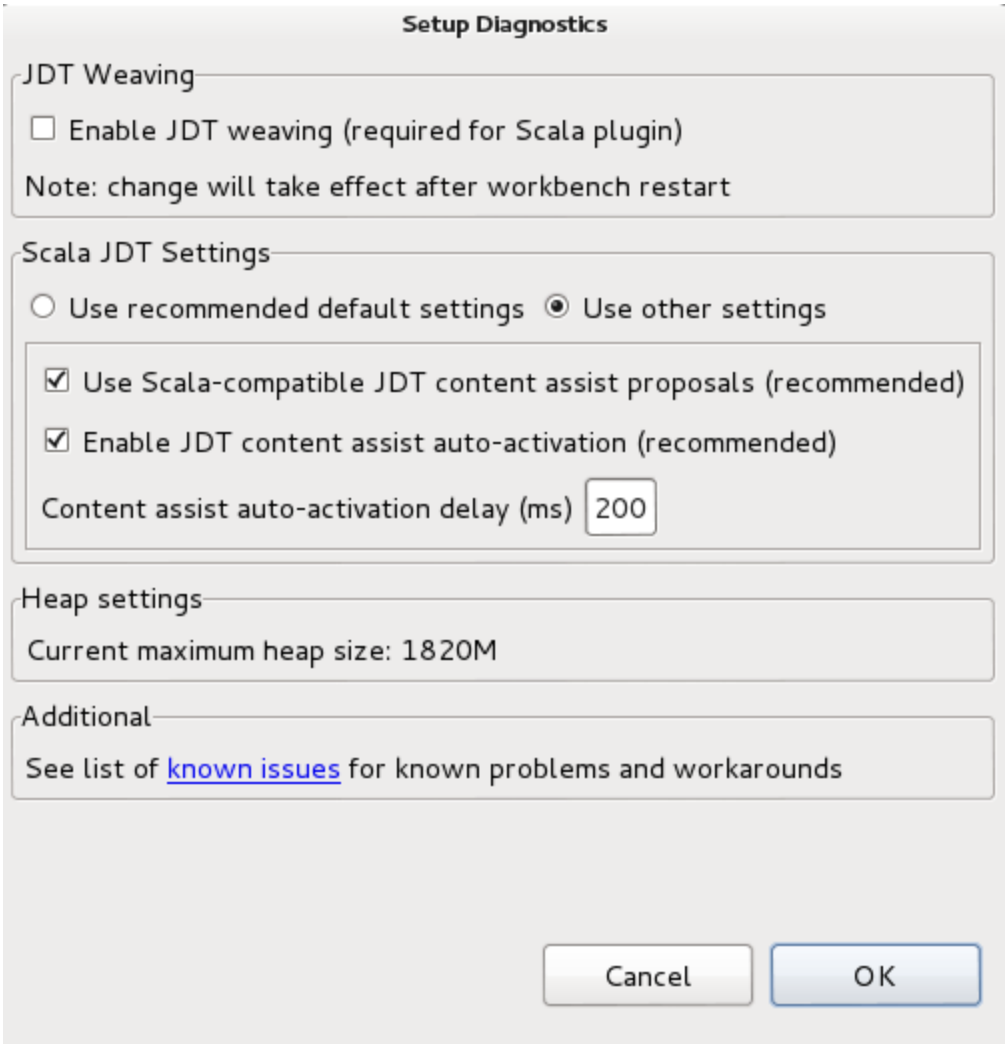
Check Point 1: Opening Eclipse

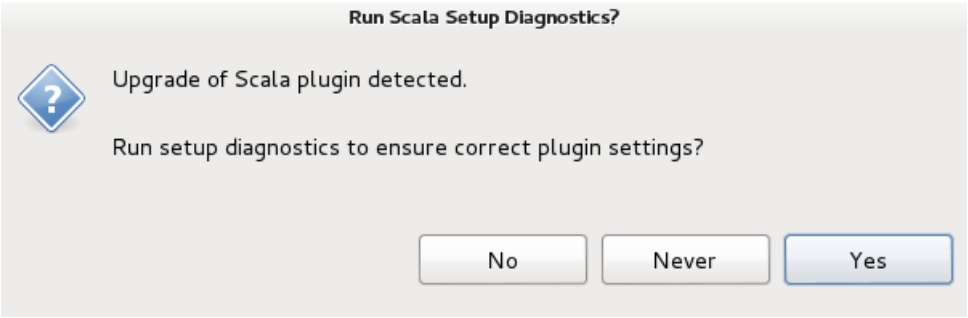
1. Start Eclipse by typing `eclipse &` into your shell.

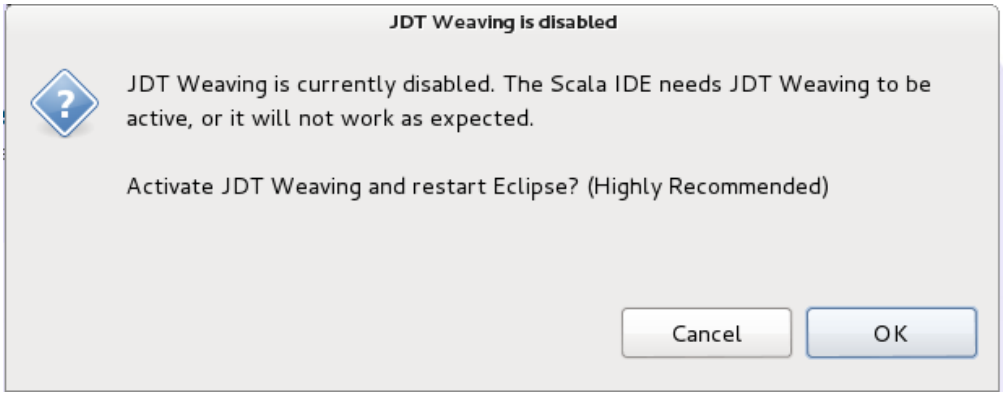
   If this is the first time you’re running Eclipse, you will prompted for where to put your workspace directory with a small window that says "Select a workspace". Simply use

the default (it should be something like /home/<your-login>/workspace). You may get multiple popups as below, simply click ‘Yes’/ ‘Okay’ when you see them.

Hint: You may want to check the box next to “Use this as the default and do not ask again”



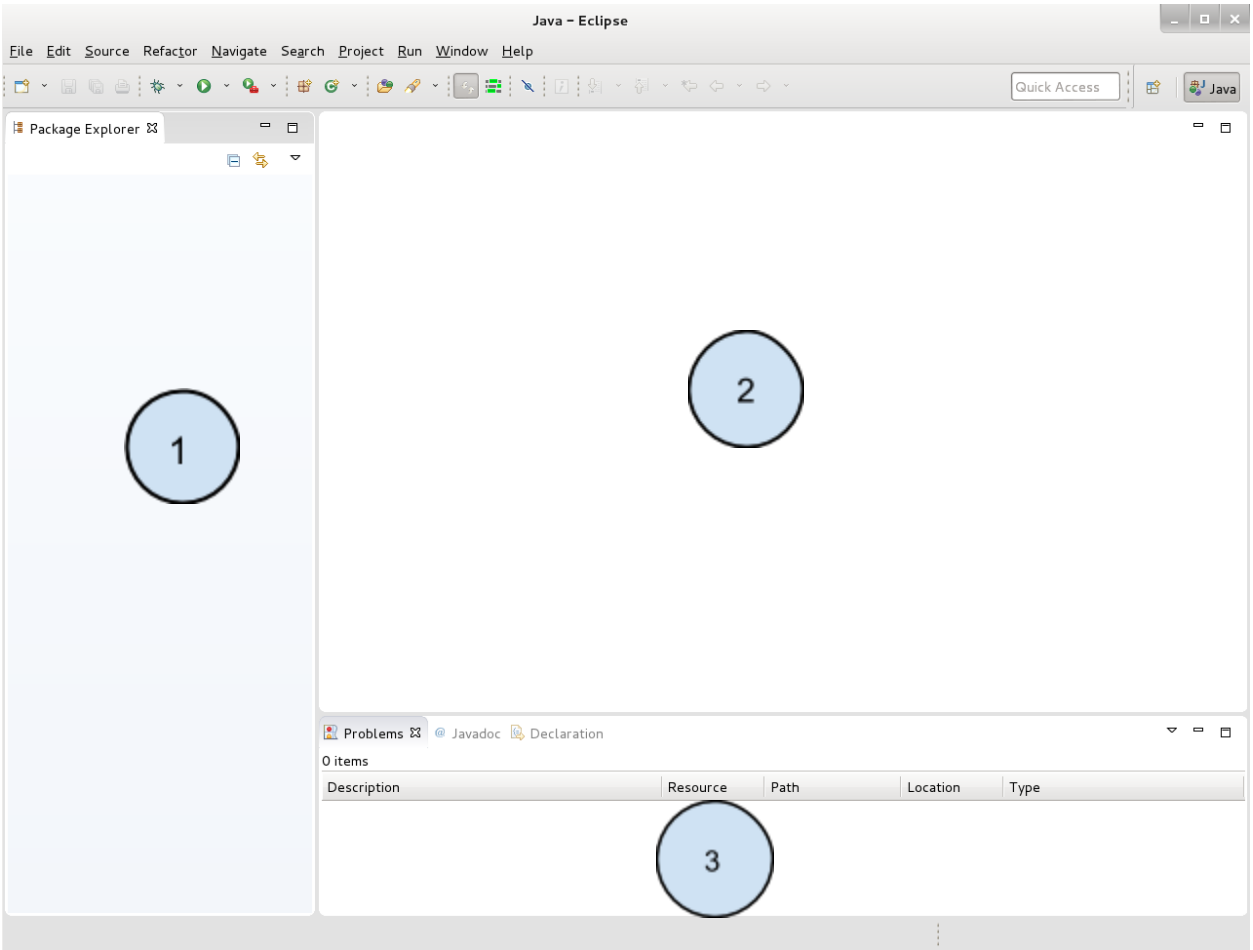




2. If you then see a Welcome screen, close it by clicking the "X" located on the tab.

3. On the right hand side there will be tabs for Task List and Outline. Close both of them

The Eclipse Interface



1. **Package Explorer:** This is the directory tree for your workspace. All of your projects, their packages, and Java files can be seen here. Projects can either be open or closed. If a package is open, it is actively compiled when you edit the Java files. If a project is closed, you can not access any of the files in the project until you open it. You can open and close a project by right clicking and selecting open/close project on its root project tag ( ).
2. **Editor region:** This is where your active file is found. Eclipse has a powerful editor that will provide all the functionality you expect. The commands for the editor are your traditional windows shortcuts (ie: CTRL + S is save, CTRL + C is copy, etc). If you have multiple files open, there will be tabs at the top that you can use to navigate between files.
3. **Console region:** This is where you can get information from Eclipse. By default, you should have a Problems tab, a Javadoc tab, and a Declaration tab. Ignore the Javadoc and Declaration tabs for now. Compiler errors and warnings will show up in the Problems tab. When you run your program, a Console tab will appear to show printlns and stack traces. You can choose to always view it by going to `Window » Show View » Console`.

Working with Eclipse

Creating Your cs015 Work Environment

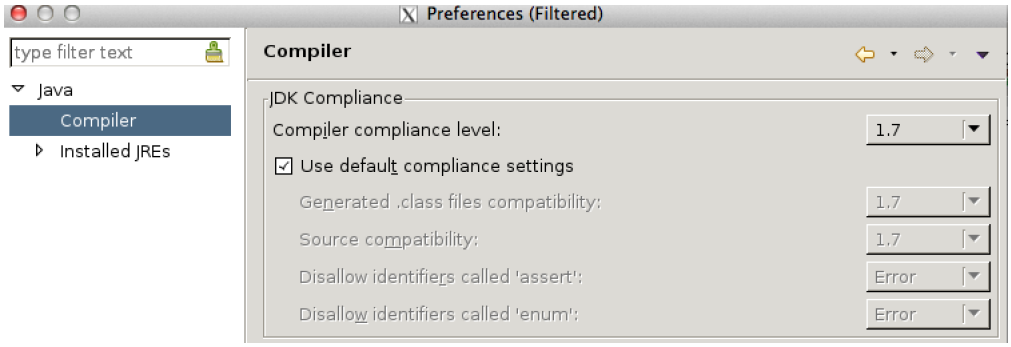
Eclipse by default will keep Java files you are working on in what it refers to as the "workspace". The workspace is organized by projects and then packages inside those projects. If you are starting a project from scratch (typically not the case in CS15), the workspace will almost always be the right way to go.

Note: the Eclipse workspace is just like any other directory, so you can certainly `cd` into the directory and make changes to your Java files with another editor. This is generally not a good idea since Eclipse might get confused and require you to re-import those "corrupted" files.

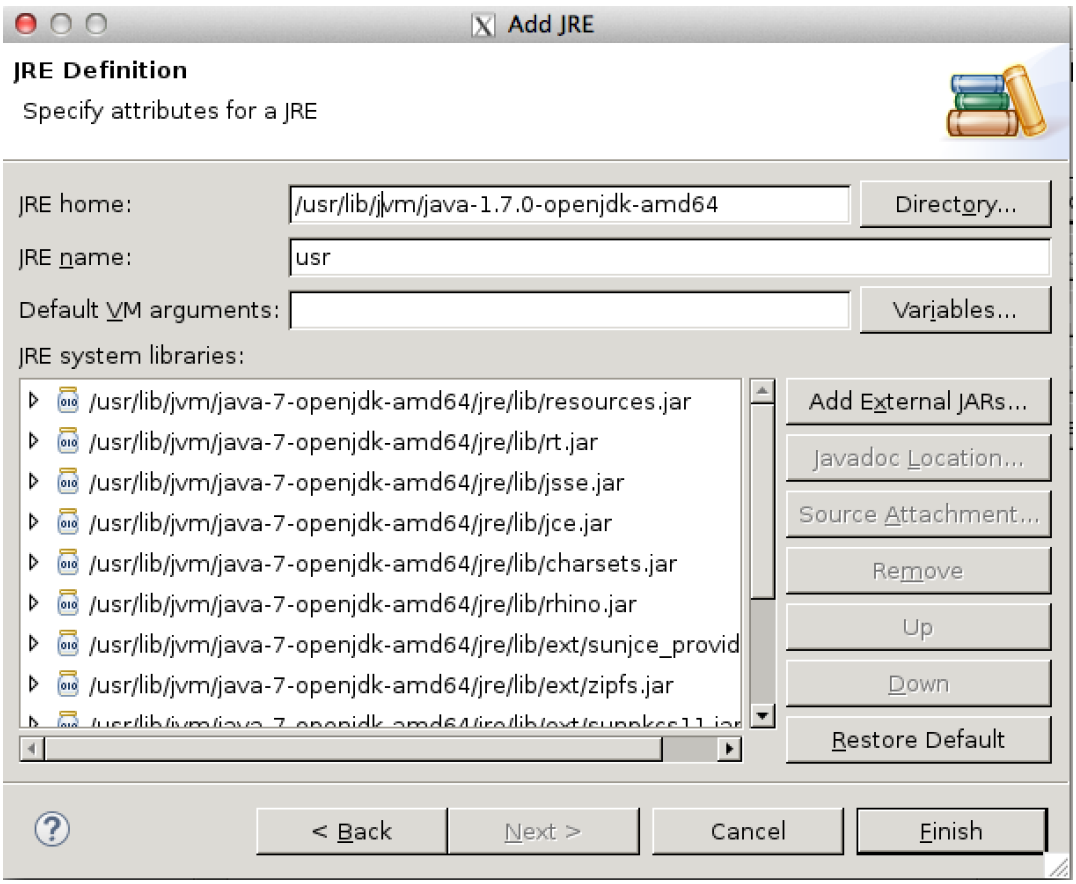
Let's begin by creating a project in your cs015 directory. This way, when you run cs015_install, our stencil code will show up in Eclipse.

Check Point 2: Creating a Project

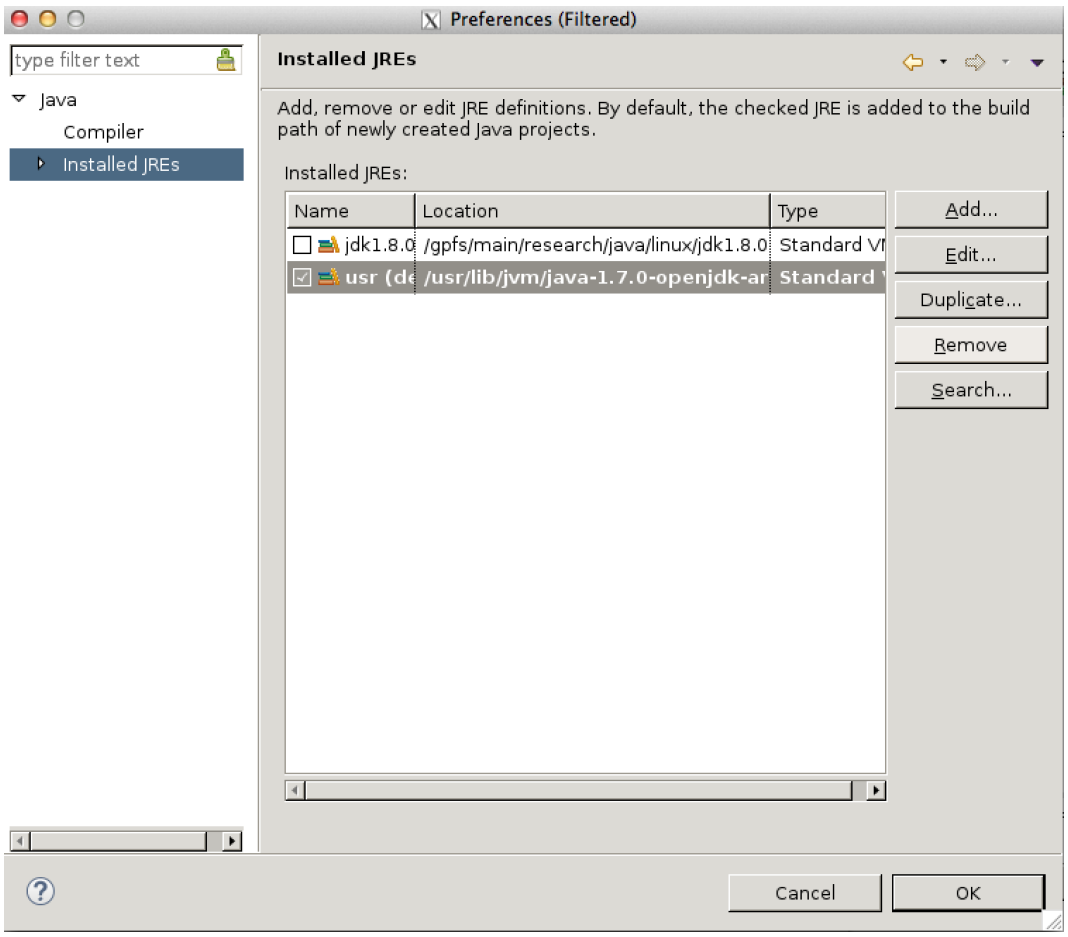
1. Go to File » New » Java Project. A window will pop up.
2. For "Project name" type: cs015
3. Under JRE >> click Configure JREs. A window should appear. Click the compiler tab on the left.
4. Change the compiler compliance level to 1.7.



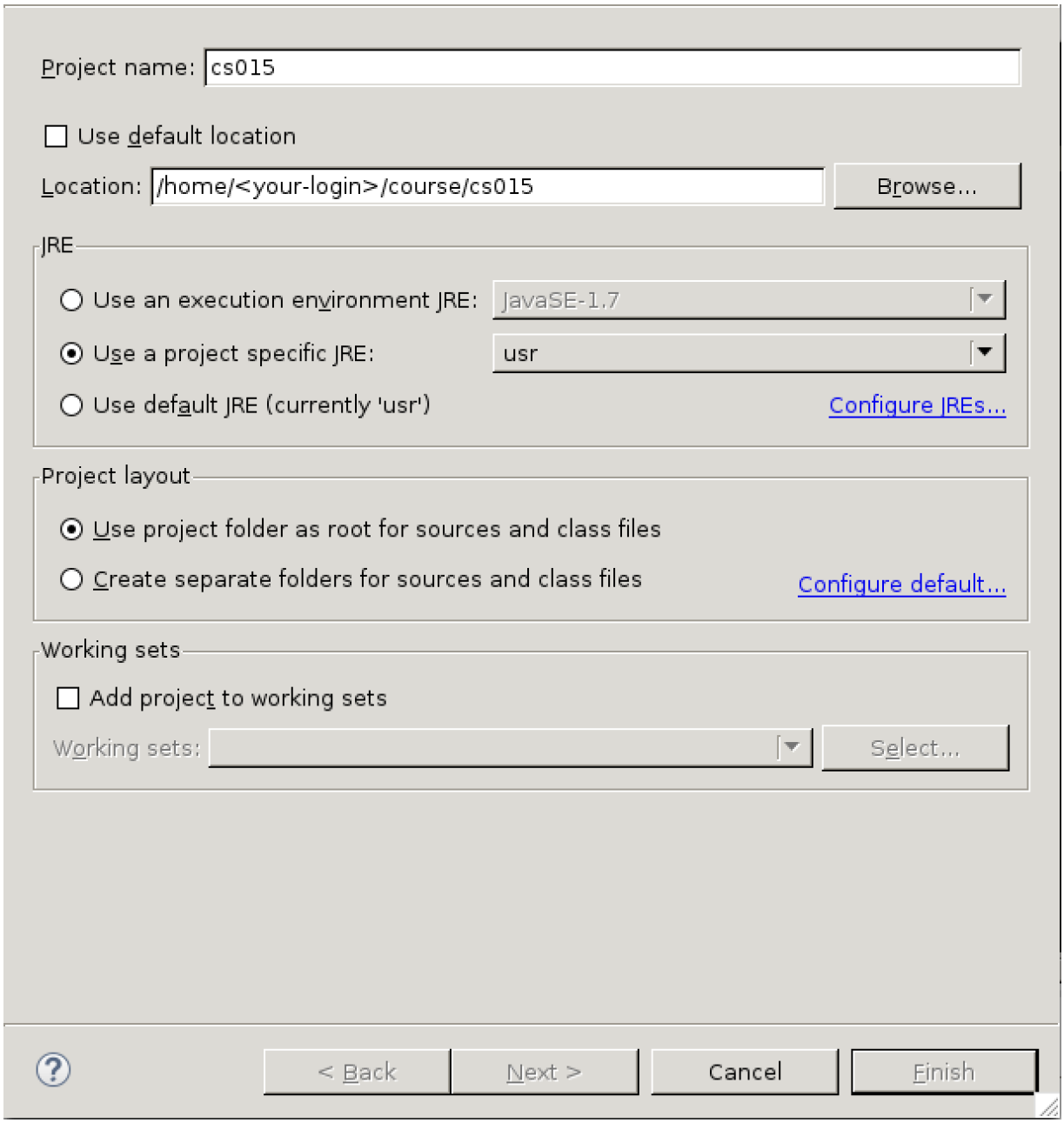
5. Click the Installed JREs tab on the left (below the compiler tab). Click add.
6. Make sure Standard VM is selected, then click next.
7. Under JRE Home, enter the following directory: /usr/lib/jvm/java-1.7.0-openjdk-amd64



8. Click Finish. Check the box next to `usr (default)`, and hit OK.



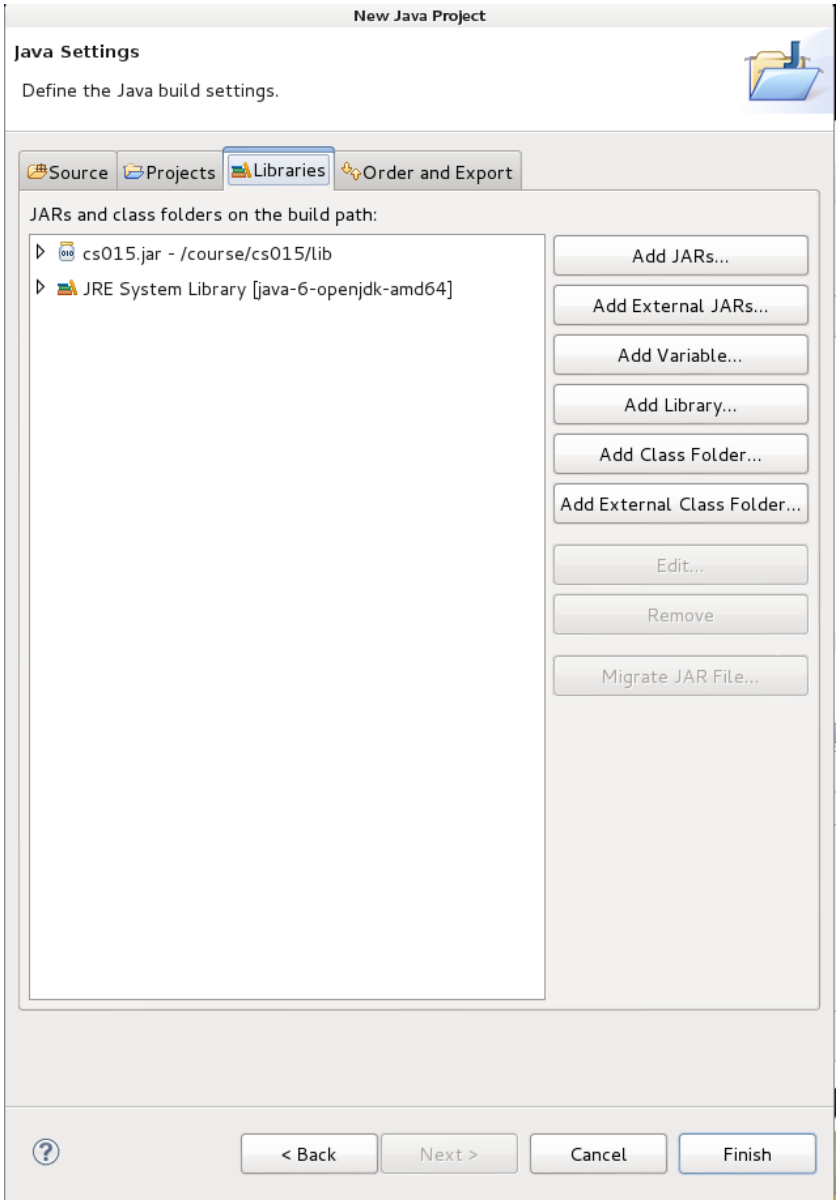
9. Under JRE, click the radio button next to “Use a project specific JRE, and be sure tha “usr” is selected in the dropdown menu.
10. Under Project layout, check the first radio button that says “Use project folder as root for sources and class files”.
11. Uncheck the “Use default location” checkbox at the top of the window.
12. Hit the Browse button.
13. Navigate to your cs015 folder (/home/<your-login>/course/cs015) and hit OK.
14. Your dialog box should look like this:



9. Click Next. This should take you to a new Wizard screen called "Java Settings" with 4 tabs.
10. In Source tab, right-click your “src” folder under the cs015 project folder and choose “Remove from Build Path”. The src folder should disappear from the tree.
11. Right-click the “cs015” project folder, and click “Use as Source Folder”.
12. Go to the Libraries tab. We want to have Eclipse know about the cs15 support code libraries so your cs15 projects will compile and run correctly.

13. Click "Add External Jar" and navigate to /course/cs015/lib and select cs015.jar. (The easiest war is to click “File System” on the left side to find the “course” folder.)

    IMPORTANT: don't forget the '/' before 'course' - this distinguishes it from your own course directory.



14. Hit OK and then Finish.

You have connected your source folder in Eclipse with the cs015 folder. Now the modifying files in Eclipse will modify files in your course directory.

Note: Be careful if you are deleting files or packages from the Package Explorer since deleting those files or packages **will** delete the actual file/folder in your course directory. If you need to delete an Eclipse Project, Eclipse will prompt you asking if you want to just remove the Project from Eclipse or if you meant to delete the actual files permanently.

IMPORTANT: When a new project goes out, run the `cs015_install <project name>` command in the terminal. Then, open up Eclipse, right click on the cs015 folder and click 'Refresh'. Refreshing will make the project folder appear under the Package Explorer tab.

Handing in Homework

In cs015 you will have to hand in answers to homework assignments and design questions. These must be handed in as PDFs, **not as text or word documents!** The following checkpoint will walk you through one way of creating PDF files in the Sunlab.

Check Point 3: Creating PDFs

1. First open LibreOffice. You can do this by going to `Applications >> Office >> LibreOffice`, or by typing `libreoffice &` into the terminal.
2. Click on `Text Document`, and type your name and login in the blank document.
3. Next go to `File >> Export as PDF`. A PDF options window will open. Just ignore it and hit `Export`.
4. You should now see the save window. Navigate to your lab0 folder (/home/<your-login>/course/cs015/lab0). Rename your file “lab0_answers”, and hit `Export`.
5. Finally, you need to hand in your file. Type `cs015_handin lab0` in the terminal and h Enter.
6. Congratulations, you just handed in your first assignment!

Do Not Forget To Hand In Your Collaboration Contract! This is how we will check you off for this lab, and we **will not grade** any future handins until we receive it.

You’re done! Congratulations!

IMPORTANT: Make sure to close Eclipse before you log off your computer. Eclipse CAN NOT run on two computers at once, so failure to close Eclipse may cause you trouble down the line.