Getting Started with Eclipse

Introduction

This guide will help get you set up to be able to work on your homework assignments. Yay! Get a cup of coffee and work your way through it.

First, you will have to decide between the following two options:

1. Working on the computer accounts we provide.
2. Working on your own laptop.

This guide will guide you through both of these options. We will first look at how to get each option set up properly. After that, we will look at the Eclipse development environment.

Contents

Getting Everything Ready and Installed

Working With the Accounts We Provide

Working with the accounts we provide has the advantage that most things are already set up for you. To do so, either go to the *Grundausbildungspool* in the basement of *Hermann-Rodewald-Straße 3* or login to the servers using your own computer. In both cases, you need to login with the credentials you got when you signed up for studying computer science (the user name will most likely be something like *stu0000*). To login using your own computer, you need to install the ThinLinc client application. When you start the ThinLinc client, you are not only prompted for your credentials, but also for a server address; use `thinlinc.informatik.uni-kiel.de`. Once you are logged in, you can find a development environment called *Eclipse* through the start menu.

Whatever way you choose: to get ready to work on your homework assignments, you do have to download the ACM Java library. Click this link and save the file somewhere you'll be able to find it again. For better documentation inside of Eclipse, also download this archive and save it at the same place as the ACM Java library.

Working on Your Own Computer

To be able to work on your own computer, you need to make sure that you have three things installed:

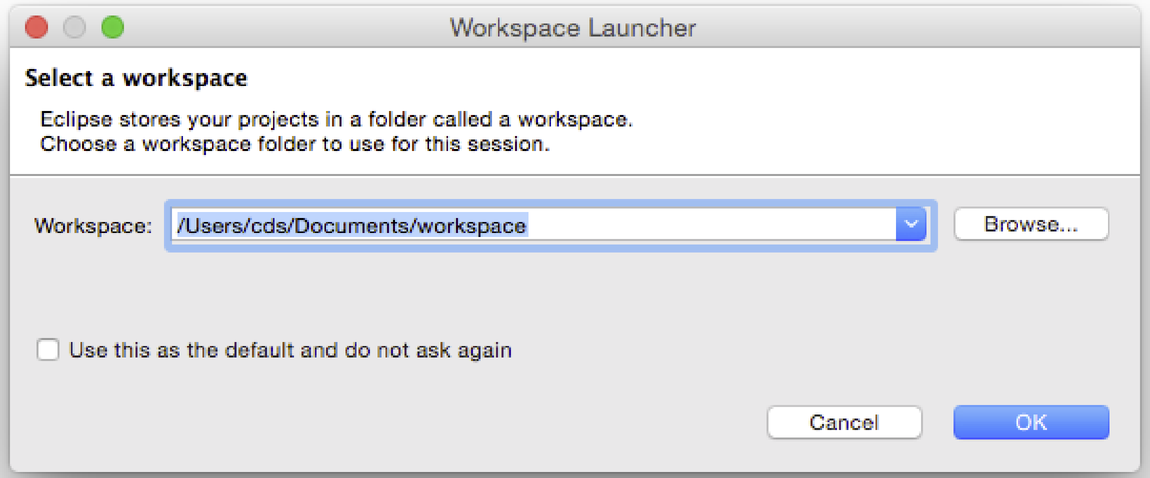
- The Java Development Kit. To download that, go to this site and use the left big button to download the *Java Platform (JDK)*.
- The Eclipse development environment. Simply follow this tutorial to install the *Eclipse IDE for Java Developers*.
- The ACM Java library most of our assignments use. Click this link **and** this link and save the files somewhere you'll be able to find them again.

Working With Eclipse

This section will help you get to grips with the Eclipse development environment. We'll start with a small tour around Eclipse, and finish by walking through all the steps necessary to actually write and execute your first Java program.

A Tour Through Eclipse

When you start Eclipse for the first time, you'll see something like the following dialogue that asks you for where you want your *workspace* to be saved:



Workspace Launcher

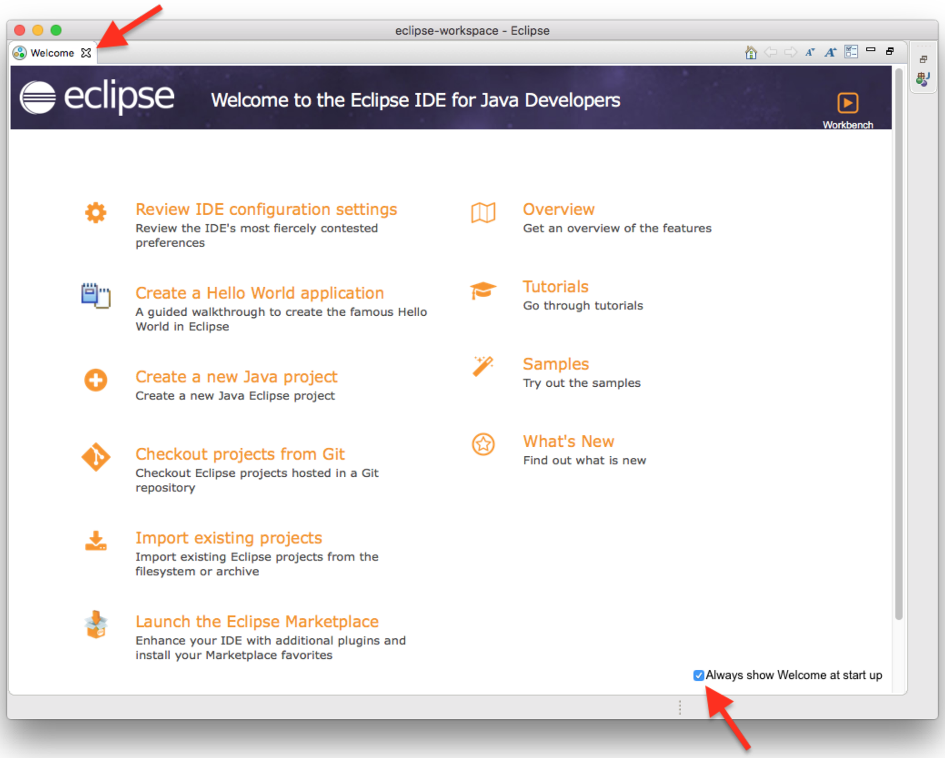
Select a workspace

Eclipse stores your projects in a folder called a workspace.
Choose a workspace folder to use for this session.

Workspace: /Users/cds/Documents/workspace

☐ Use this as the default and do not ask again

The workspace is where you will be saving all your homework. If you haven't worked with Eclipse before, just click OK and thereby accept the default location. Eclipse then loads and greets you with a nice welcome screen. Feel free to switch off the "Always show Welcome at start up" option at the bottom and dismiss the screen by clicking the X at the top.



eclipse-workspace - Eclipse

Welcome to the Eclipse IDE for Java Developers

Review IDE configuration settings
Review the IDE's most fiercely contested preferences

Create a Hello World application
A guided walkthrough to create the famous Hello World in Eclipse

Create a new Java project
Create a new Java Eclipse project

Checkout projects from Git
Checkout Eclipse projects hosted in a Git repository

Import existing projects
Import existing Eclipse projects from the filesystem or archive

Launch the Eclipse Marketplace
Enhance your IDE with additional plugins and install your Marketplace favorites

Overview
Get an overview of the features

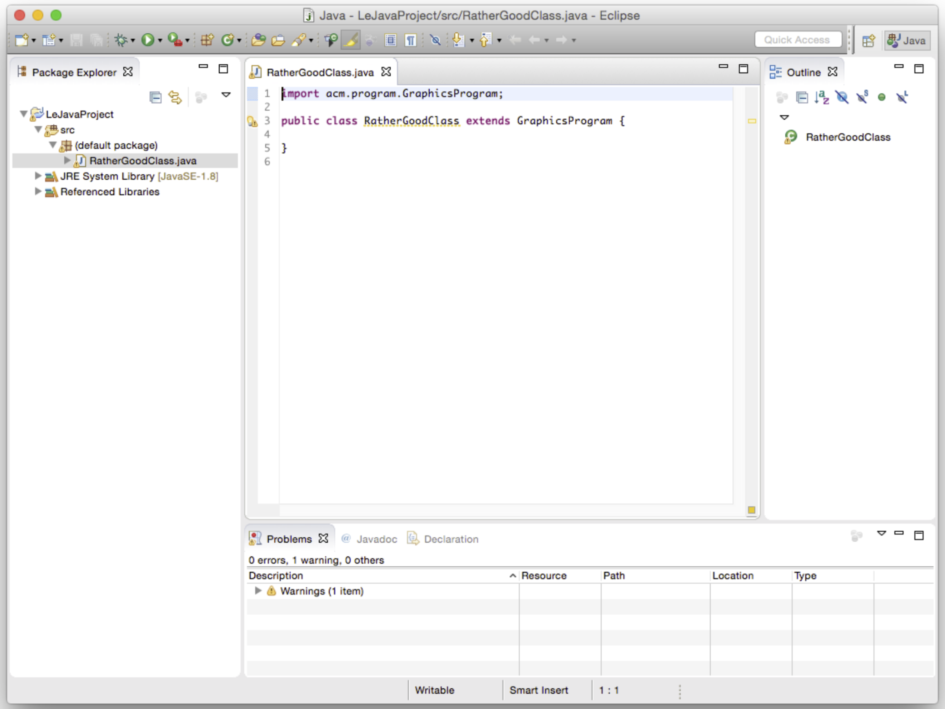
Tutorials
Go through tutorials

Samples
Try out the samples

What's New
Find out what is new

☑ Always show Welcome at start up

What you see next is the actual Eclipse development environment that you'll be spending most of your time in:



```
import acm.program.GraphicsProgram;

public class RatherGoodClass extends GraphicsProgram {

}
```

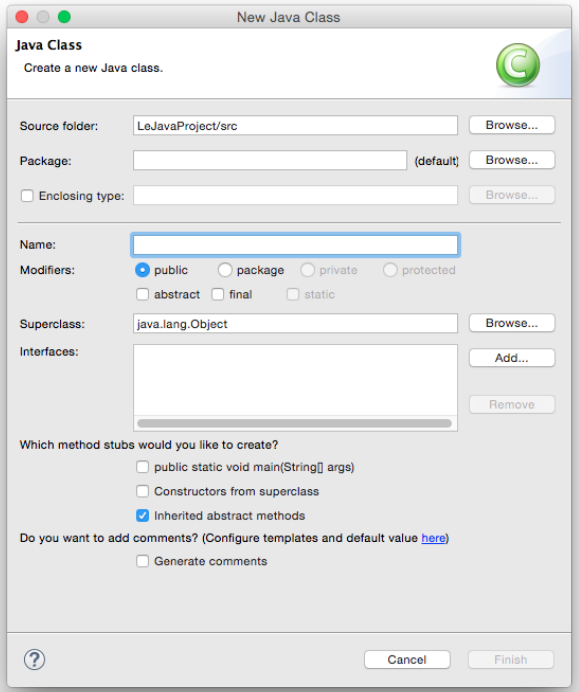
0 errors, 1 warning, 0 others

Description	Resource	Path	Location	Type
Warnings (1 item)				

The window is divided into different areas. Most of them contain *views*, such as the *Package Explorer* to the left. The big empty area at the centre of the screen will house the Java source code editor, a text editor to write Java code with. You can drag views around, and close them as you wish. For example, you won't need the *Task List* during our lecture. Feel free to close it now. If you want to reopen a view you have closed, you can find a list of all available views through the menu by clicking *Window -> Show View -> Other*.

Writing and Executing Java Programs

To solve your homework assignments, you will need to know how to create new Java projects, add classes to them, and how to execute them. Let's start by creating a new project. Right-click in the *Package Explorer*, and select *New -> Java Project*. This will open the following dialogue:


New Java Class

Java Class

Create a new Java class.

Source folder: LeJavaProject/src

Package: (default)

☐ Enclosing type:

Name:

Modifiers: [✓ public] package private protected

☐ abstract ☐ final ☐ static

Superclass: java.lang.Object

Interfaces:

Which method stubs would you like to create?

☐ public static void main(String[] args)

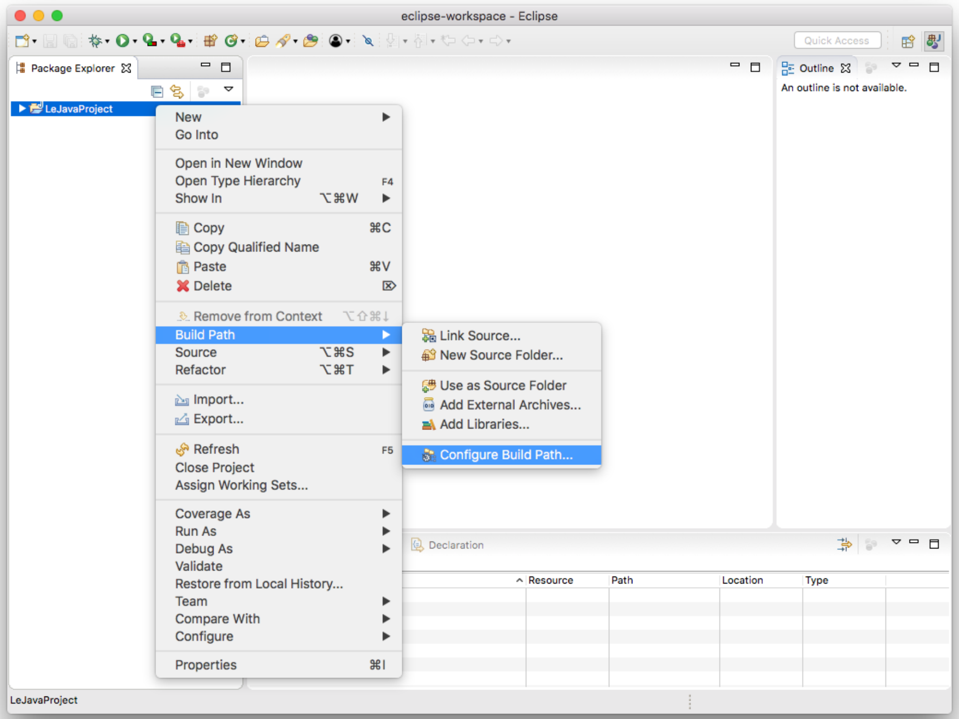
☐ Constructors from superclass

☑ Inherited abstract methods

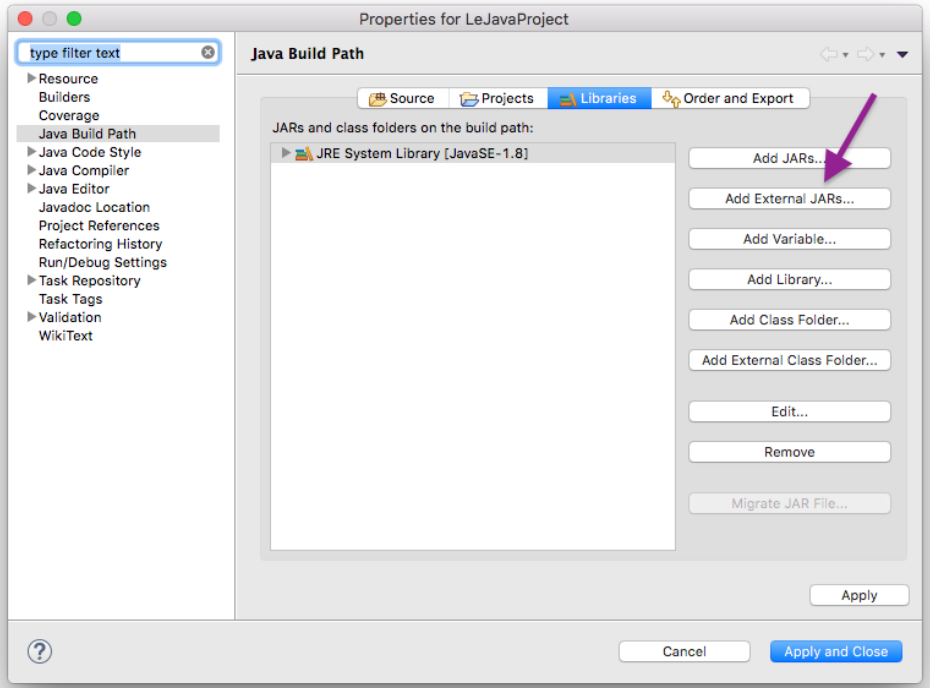
Do you want to add comments? (Configure templates and default value here)

☐ Generate comments

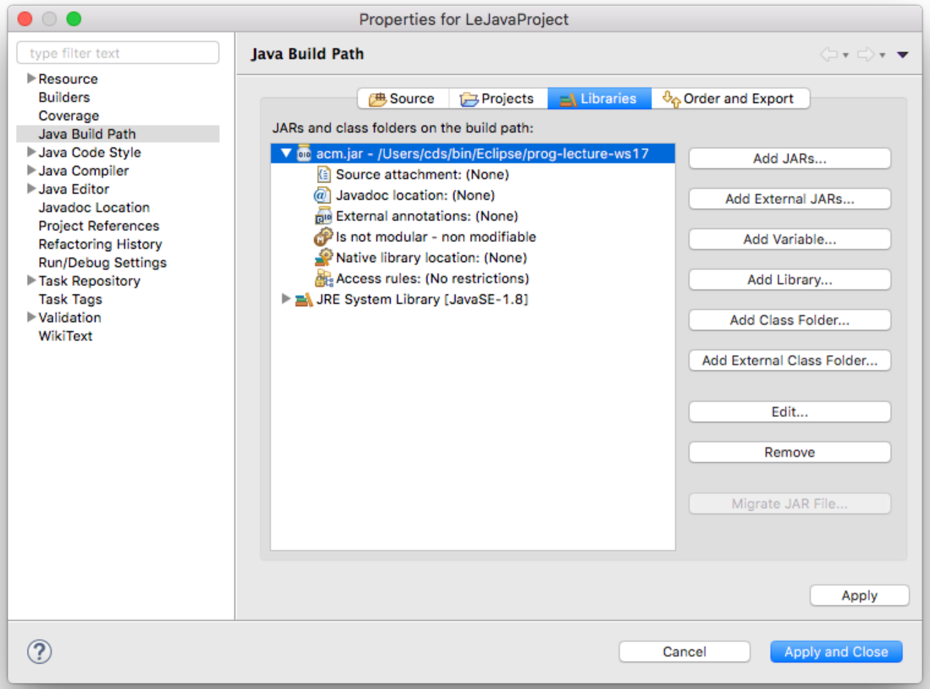
Enter a project name that describes the project. For your homework assignments, for example, you may want the project name to contain the assignment the project is supposed to solve. Leave the rest untouched and click *Finish*. Your Eclipse workspace will now contain an entry for the new project. Eclipse has to be told that you want to use the ACM library with that project. To configure it that way, right-click on the project, click on *Build Path* and select *Config ure Build Path...*:



Remember the ACM library you downloaded? This is where we need it. Since you will be making use of that library, we need to configure the project such that it knows that the library exists. To that end, switch to the *Libraries* tab:

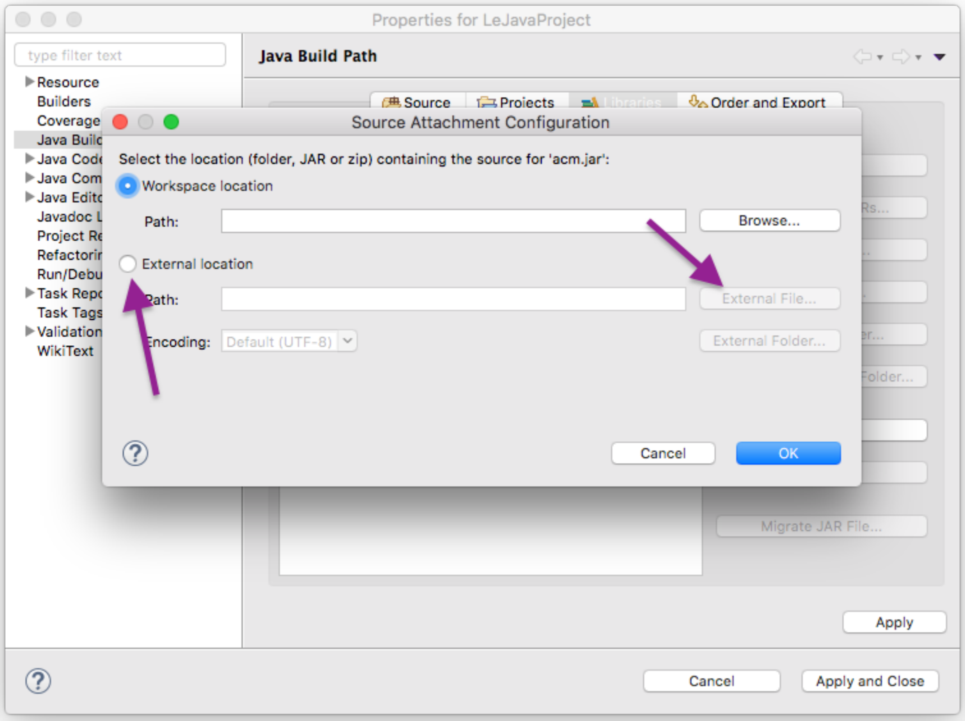


A library in Java is distributed as a file with the `.jar` file extension. Click on the *Add External JARs* button and select the downloaded ACM library (if you don't remember where you saved it, simply download the library again). Once you have found the library, it should show up in the dialogue. If you expand its entry, it should look something like this:



JARs and class folders on the build path:
acm.jar - /Users/cds/bin/Eclipse/prog-lecture-ws17
Source attachment: (None)
Javadoc location: (None)
External annotations: (None)
Is not modular - non modifiable
Native library location: (None)
Access rules: (No restrictions)
JRE System Library [JavaSE-1.8]

The ACM library is not ready to be used, but Eclipse won't display its documentation. We like documentation, so we tell Eclipse where to find it. Double-click the *Source attachment* entry, which will open the following dialog:



Select the location (folder, JAR or zip) containing the source for 'acm.jar':

[✓ Workspace location]

Path:

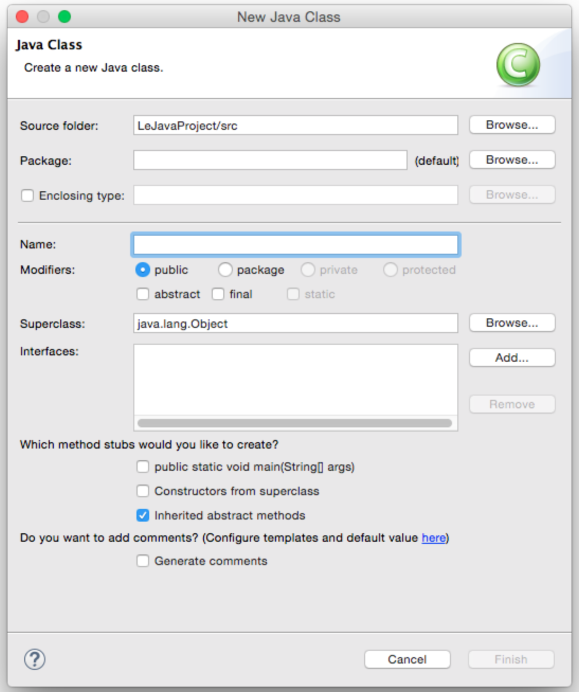
External location

Path:

Encoding: Default (UTF-8)

Select *External location* and click the *External File...* button to select the *acm.zip* file you downloaded. Click *OK* to dismiss the dialog, click *Apply and Close* to dismiss the build path configuration and you're all set!

You are now ready to add your first class to your newly configured project. Right-click your new project in the *Package Explorer* and select *New -> Class*:



Source folder: LeJavaProject/src

Package: (default)

Enclosing type:

Name:

Modifiers: [✓ public] package private protected

abstract final static

Superclass: java.lang.Object

Interfaces:

Which method stubs would you like to create?

public static void main(String[] args)

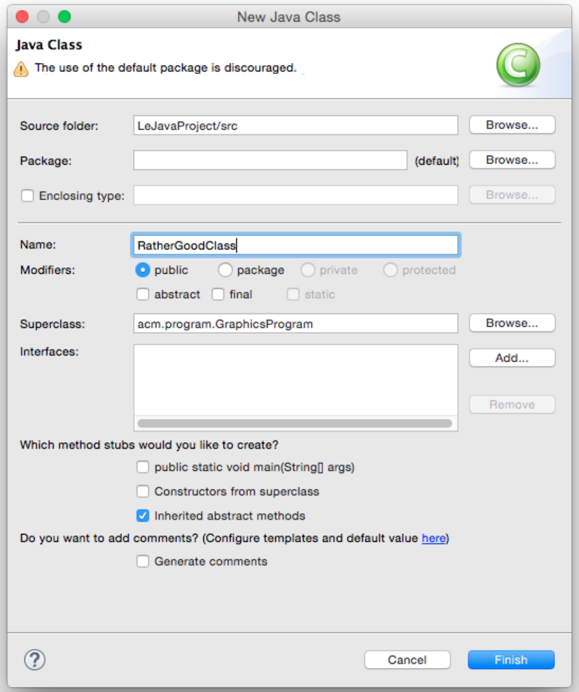
Constructors from superclass

[✓ Inherited abstract methods]

Do you want to add comments? (Configure templates and default value here)

Generate comments

Give your class a proper name. The dialogue will tell you if your class name is valid or not. For the first few programming exercises, you want your class to extend a superclass, such as `GraphicsProgram`. To choose a superclass, click the corresponding *Browse* button. The result may look something like this:


New Java Class

Java Class

⚠ The use of the default package is discouraged.

Source folder: LeJavaProject/src

Package: (default)

☐ Enclosing type:

Name: RatherGoodClass

Modifiers: [✓ public] package private protected

☐ abstract ☐ final ☐ static

Superclass: acm.program.GraphicsProgram

Interfaces:

Which method stubs would you like to create?

☐ public static void main(String[] args)

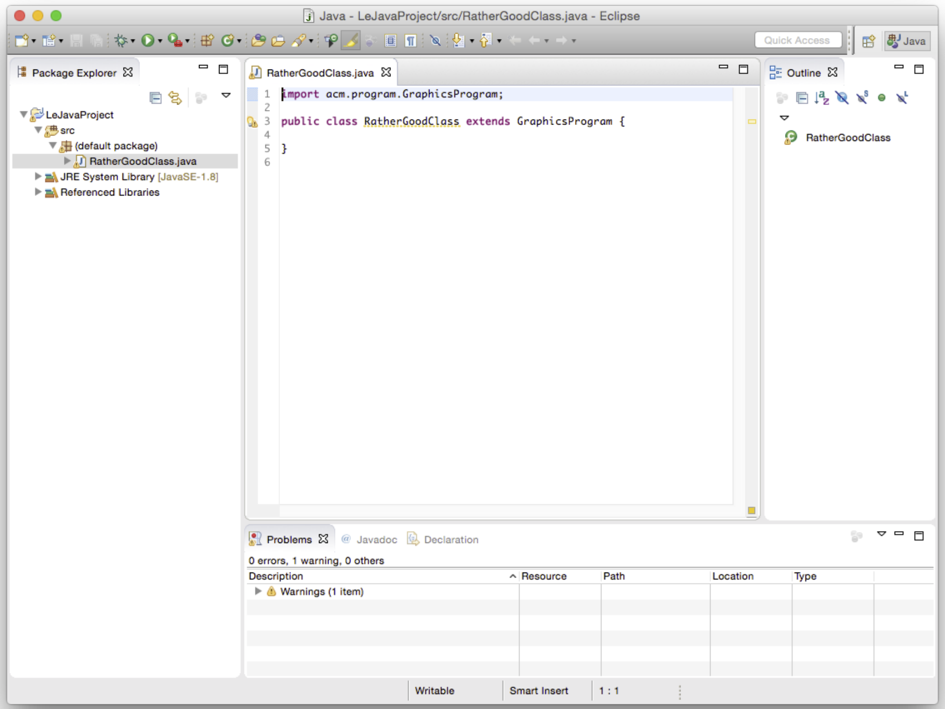
☐ Constructors from superclass

☑ Inherited abstract methods

Do you want to add comments? (Configure templates and default value here)

☐ Generate comments

Note that the dialogue still gives us a warning because we have left the package name empty. You can safely ignore that warning for the moment. There will come a time when you will actually use packages, but now is not that time. Instead, click *Finish*. Eclipse will create the class for you and open it in an editor for you to start writing code:


Java - LeJavaProject/src/RatherGoodClass.java - Eclipse

Package Explorer: LeJavaProject › src › (default package) › RatherGoodClass.java; JRE System Library [JavaSE-1.8]; Referenced Libraries

RatherGoodClass.java

```
import acm.program.GraphicsProgram;

public class RatherGoodClass extends GraphicsProgram {

}
```

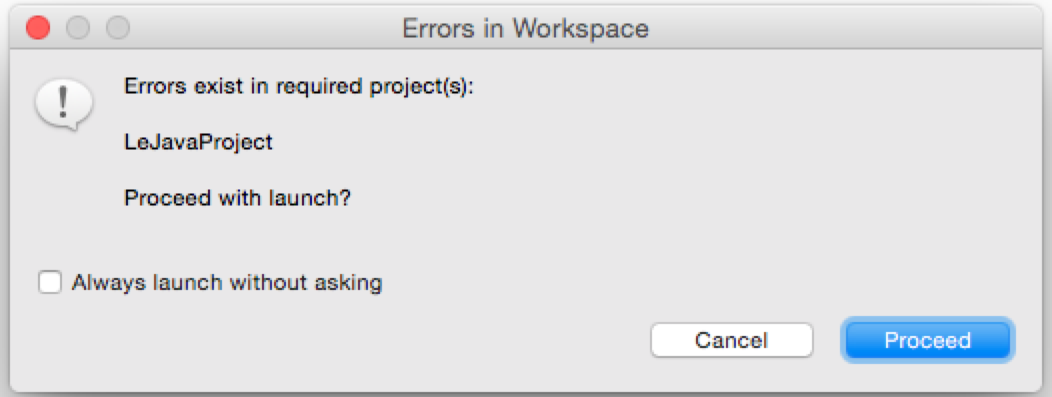
Outline: RatherGoodClass

Problems: 0 errors, 1 warning, 0 others

Description	Resource	Path	Location	Type
⚠ Warnings (1 item)				

Writable | Smart Insert | 1 : 1

Let's say you have actually written a bit of code and want to see if it works. Save your class. Then, right-click it in the *Package Explorer* and select *Run As -> Java Applet* (or *Java Application*). If everything is fine, a window should pop up and your program should be executing. If instead Java cannot execute your program because of errors in your source code, Eclipse will tell you so:



Errors exist in required project(s):

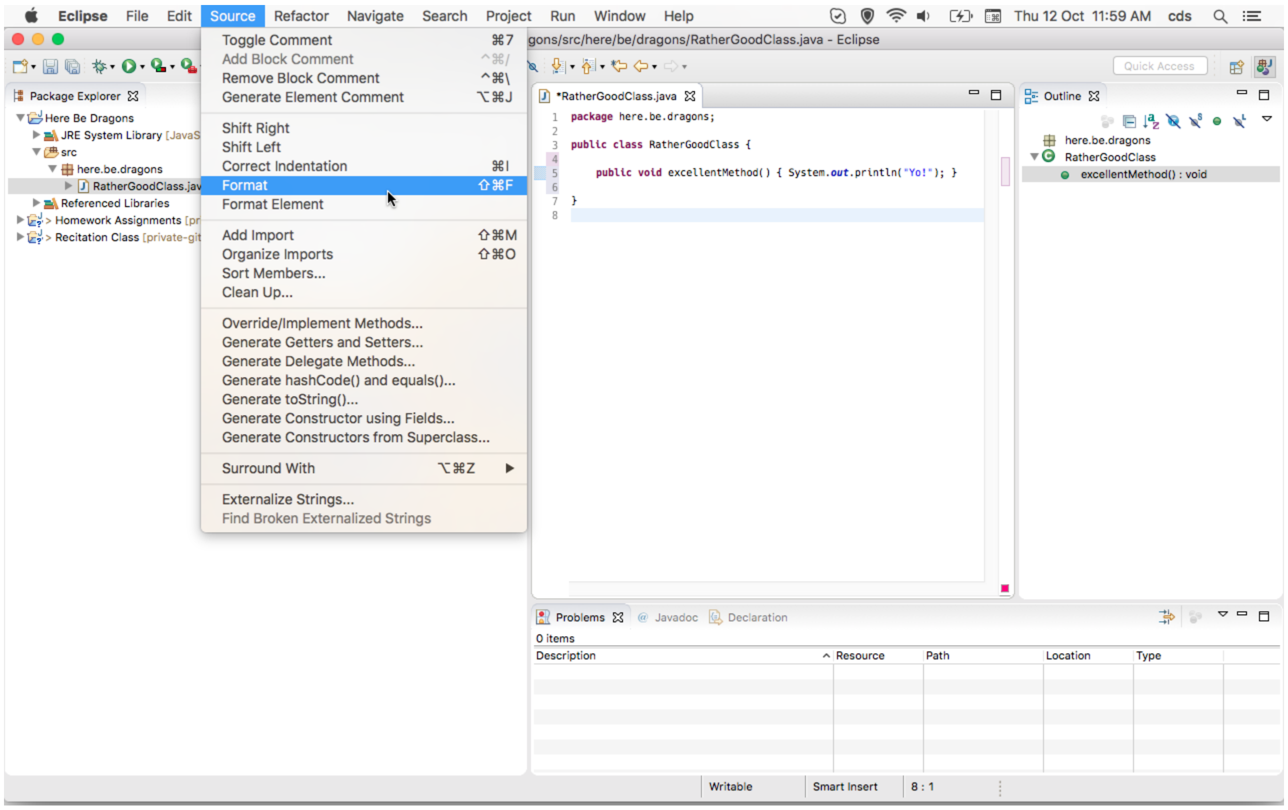
LeJavaProject

Proceed with launch?

In that case, hit *Cancel* and go hunt that error down. Remember the *Problems* view at the bottom of the Eclipse window? That's actually quite helpful for hunting down errors: it lists every error Eclipse was able to find. Double-clicking the error will jump to the offending part of the source code so you can fix it.

Formatting Source Code

The automatic tests we run on the source code you submit won't let you hand in badly formatted code. This is because we want to force you to write code that is properly readable. Fortunately, formatting your code properly is a matter of two clicks of a mouse button:



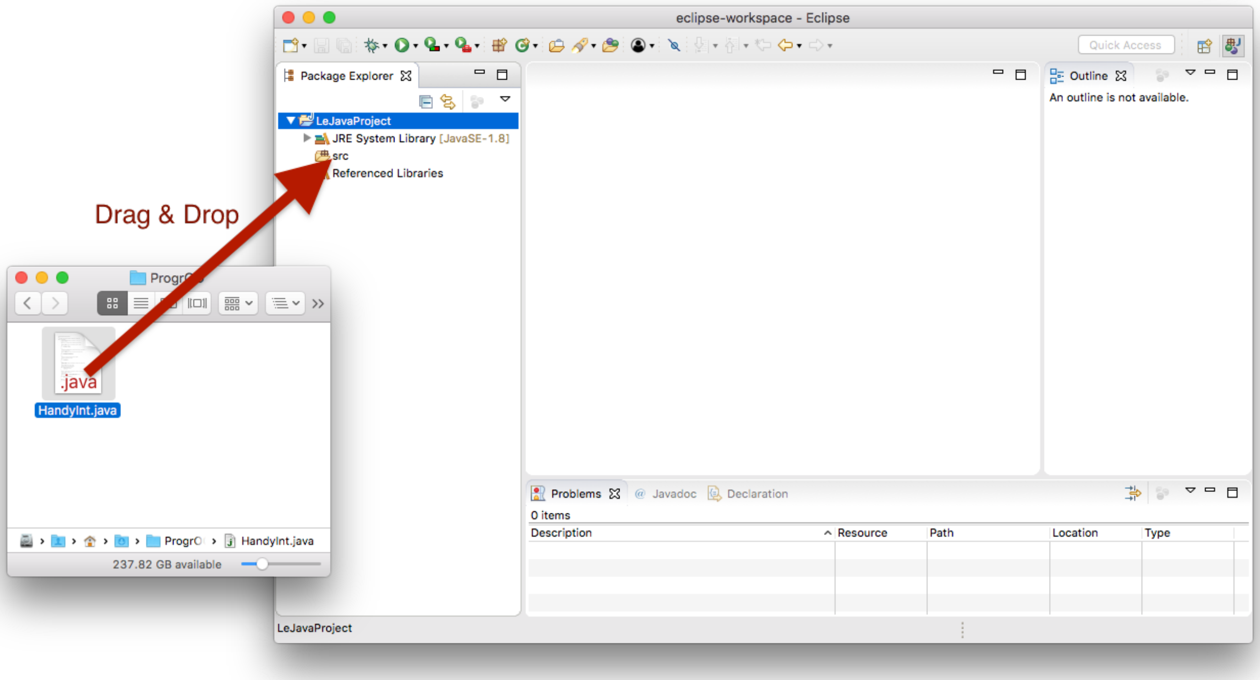
```
package here.be.dragons;

public class RatherGoodClass {

    public void excellentMethod() { System.out.println("Yo!"); }

}
```

Importing Classes

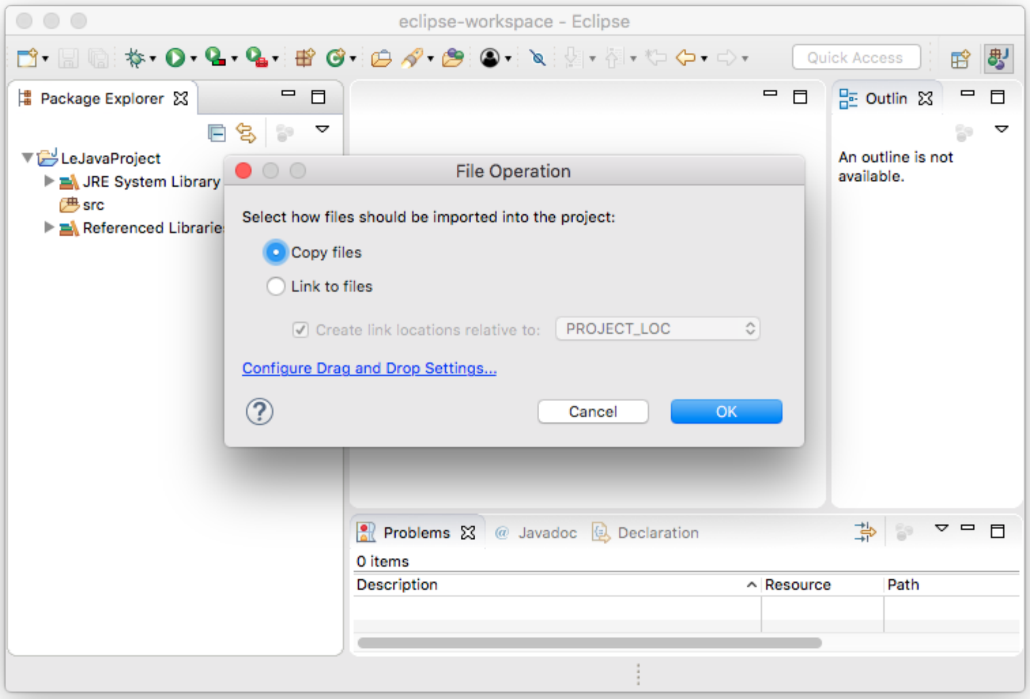
There will be assignments where we ask you to import existing classes into your workspace. There are (at least) two ways to do so:

1. Right-click the destination folder in your Eclipse project and choose *Import...*.
2. Use drag & drop.

We will now describe the latter. Start by downloading the respective class. Then, import it into your Java project by dragging and dropping it from your file explorer to your source folder, like this:



Eclipse will ask you whether you want to copy the file into your project or just link to it. You want the former:



File Operation

Select how files should be imported into the project:

[✓ Copy files]

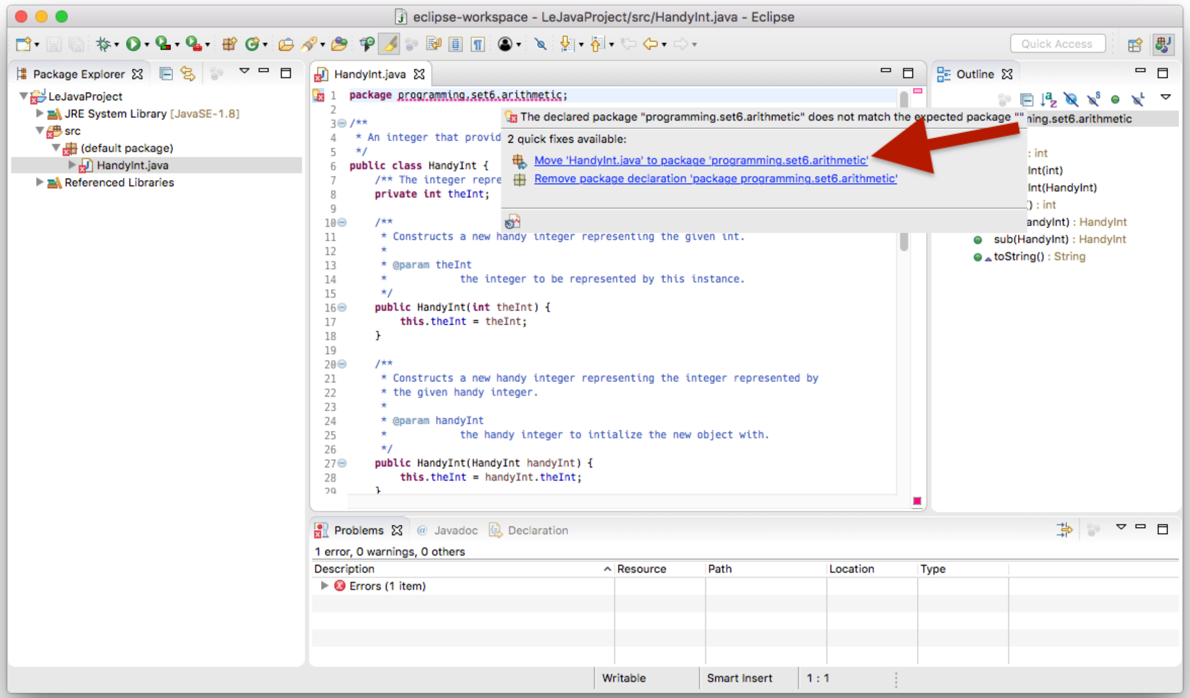
Link to files

Create link locations relative to: PROJECT_LOC

Configure Drag and Drop Settings...

Cancel OK

The imported file may declare to be in a different package than the one you imported it to, resulting in a compiler error. To fix that, simply open up the file, point the mouse cursor at the wrong package declaration, and choose to move the file to that package.



```java
package programming.set6.arithmetic;

/**
 * An integer that provid
 */
public class HandyInt {
    /** The integer repre
    private int theInt;

    /**
     * Constructs a new handy integer representing the given int.
     *
     * @param theInt
     *            the integer to be represented by this instance.
     */
    public HandyInt(int theInt) {
        this.theInt = theInt;
    }

    /**
     * Constructs a new handy integer representing the integer represented by
     * the given handy integer.
     *
     * @param handyInt
     *            the handy integer to intialize the new object with.
     */
    public HandyInt(HandyInt handyInt) {
        this.theInt = handyInt.theInt;
    }
```

The declared package "programming.set6.arithmetic" does not match the expected package ""

2 quick fixes available:

- Move 'HandyInt.java' to package 'programming.set6.arithmetic'
- Remove package declaration 'package programming.set6.arithmetic'

1 error, 0 warnings, 0 others

Description	Resource	Path	Location	Type
Errors (1 item)				