

Welcome to CIS113

Data Structures

Introductions, JAVA and Eclipse

Intro

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- Phone: (661) 450-8883
- Office/Hours: N/A – correspondence will be handled through e-mail or over the phone

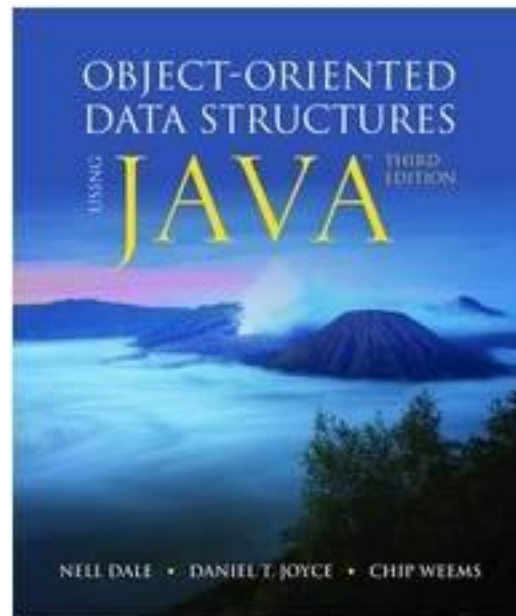
Syllabus: Textbook

Object Oriented Data Structures

Using Java 3rd Edition

N. Dale, D.Y. Joyce, C. Weems

ISBN: 978-1-4496-1354-9



Syllabus: Prerequisites

- Completed the following
 - CIS 111
 - CIS 161
 - CIS 121 (not required but advised)
- Eligible for or have already taken
 - ENGL 099
 - READ 099
 - MATH 130

Prerequisites: Java constructs

(you should already be familiar with)

- Built-in data types including the array type
- Control structures
 - while
 - do
 - for
 - if
 - switch
- Creating and instantiating objects
- Basic user defined classes
 - variables & methods
 - constructors, method parameters, and the return statement
 - visibility modifiers

So why are you here?

Syllabus: Objectives

- Abstract data types (ADTs)
 - The Stack
 - The List (array based, linked lists, headers/trailers)
 - The Queue
 - Priority Queues
 - Heaps
 - Graphs
- Recursion
- Searching and sorting algorithms
 - Binary search trees
 - Bubble sort
 - Insertion sort
 - Quick sort
 - Heap sort
 - Merge sort
- Big-O notation

Syllabus: Assignments

- One assignment is given per class
 - Due at the beginning of the next class
 - Late work receives no credit
- Working together is OK – but don't copy!
 - Handing in duplicate / copied assignments
 - You share the points
- Missing a class
 - Contact me within 24 hours of the missed class
 - Discuss exceptional cases for late work or make up exams

Syllabus: Exams

- Two exams and one final project
- No OBAN (Open Book And Neighbor)
- Cheating is not tolerated
 - You get a 0
 - You get kicked out for the day
 - You get reported

Syllabus: Grading

Class participation (& quizzes)		80
Assignments	12 @ 10 points each	120
Exams	2 @ 50 points each	100
Final Project	1 @ 100 points	100
<hr/>		
Total		400

A (360-400)	B (320-359)	C (280-319)
D (240-279)	F (<240)	

Syllabus: Lab Rules

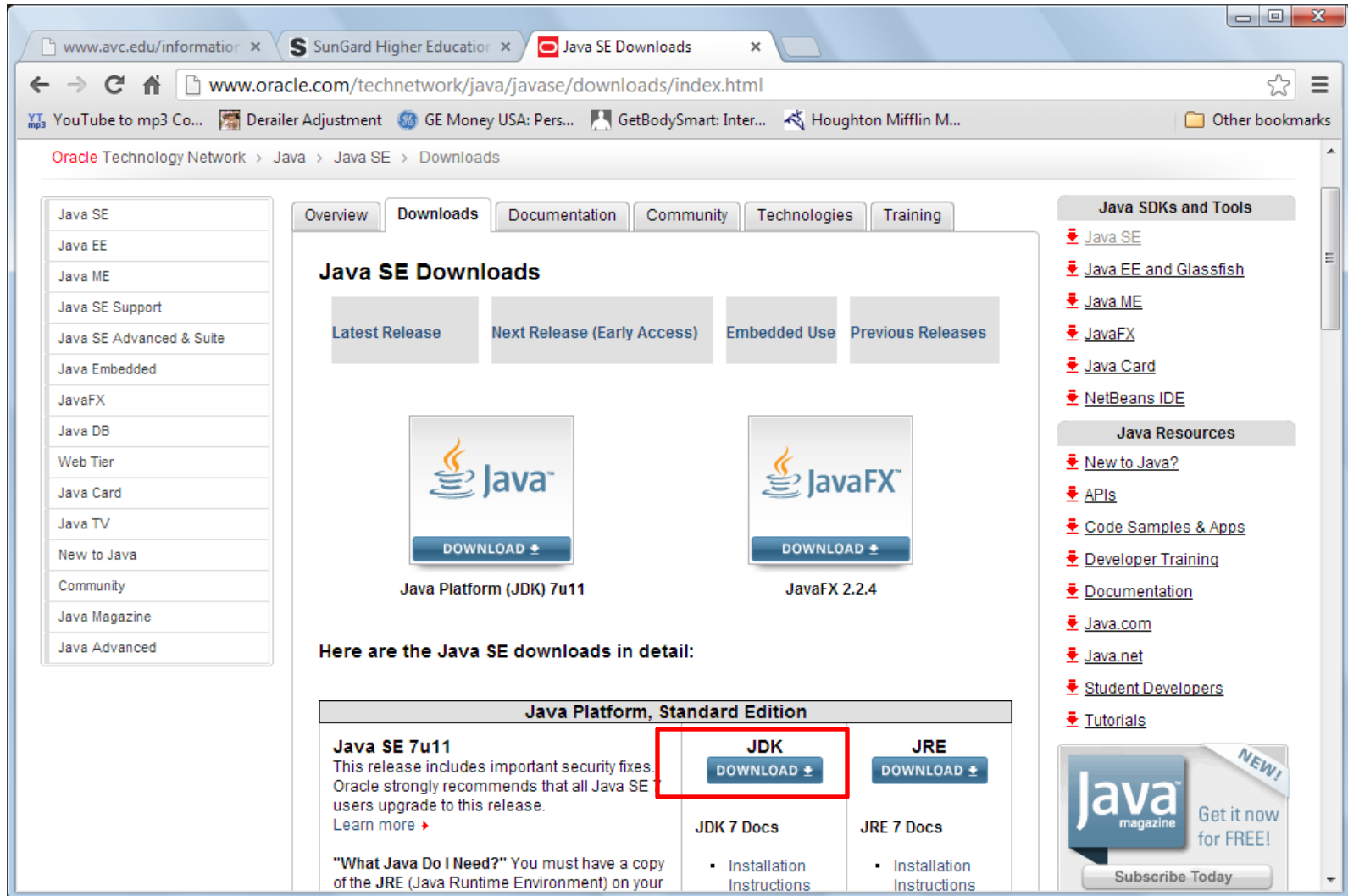
- Food and drinks other than bottled water are not allowed on the third floor of this building.
 - **No exceptions**
- Computers must be turned off during the lecture unless otherwise specified.

Syllabus: Attendance

Bottom line – BE HERE and BE ON TIME

- If you are registered for this class and miss the first day, **you will be dropped.**
- If you have more than two unexcused absences, **you will be dropped.**
- Exceptions may be made, if I am given advance notice and there is a legitimate reason.

Download/Install the latest Java SDK




The screenshot shows the Oracle Java SE Downloads page in a web browser. The browser's address bar displays www.oracle.com/technetwork/java/javase/downloads/index.html. The page features a navigation menu on the left with links to Java SE, Java EE, Java ME, Java SE Support, Java SE Advanced & Suite, Java Embedded, JavaFX, Java DB, Web Tier, Java Card, Java TV, New to Java, Community, Java Magazine, and Java Advanced. The main content area is titled "Java SE Downloads" and includes tabs for Overview, Downloads, Documentation, Community, Technologies, and Training. Below the tabs, there are four buttons: Latest Release, Next Release (Early Access), Embedded Use, and Previous Releases. The "Latest Release" button is selected, showing the Java Platform (JDK) 7u11 and JavaFX 2.2.4 download options. The "JDK" button is highlighted with a red box. The "JRE" button is also visible. Below the download buttons, there is a section titled "Java Platform, Standard Edition" with details for Java SE 7u11, including a description of security fixes and a link to learn more. The "JDK 7 Docs" and "JRE 7 Docs" links are also present. On the right side, there are sections for "Java SDKs and Tools" and "Java Resources" with various links. A "Java magazine" banner is at the bottom right.

Oracle Technology Network > Java > Java SE > Downloads


Overview Downloads Documentation Community Technologies Training

Java SE Downloads

Latest Release Next Release (Early Access) Embedded Use Previous Releases

 **DOWNLOAD**

Java Platform (JDK) 7u11

 **DOWNLOAD**

JavaFX 2.2.4

Here are the Java SE downloads in detail:

Java Platform, Standard Edition		
Java SE 7u11 This release includes important security fixes. Oracle strongly recommends that all Java SE users upgrade to this release. Learn more	JDK DOWNLOAD	JRE DOWNLOAD
"What Java Do I Need?" You must have a copy of the JRE (Java Runtime Environment) on your	JDK 7 Docs <ul style="list-style-type: none">Installation Instructions	JRE 7 Docs <ul style="list-style-type: none">Installation Instructions

Java SDKs and Tools

- [Java SE](#)
- [Java EE and Glassfish](#)
- [Java ME](#)
- [JavaFX](#)
- [Java Card](#)
- [NetBeans IDE](#)

Java Resources

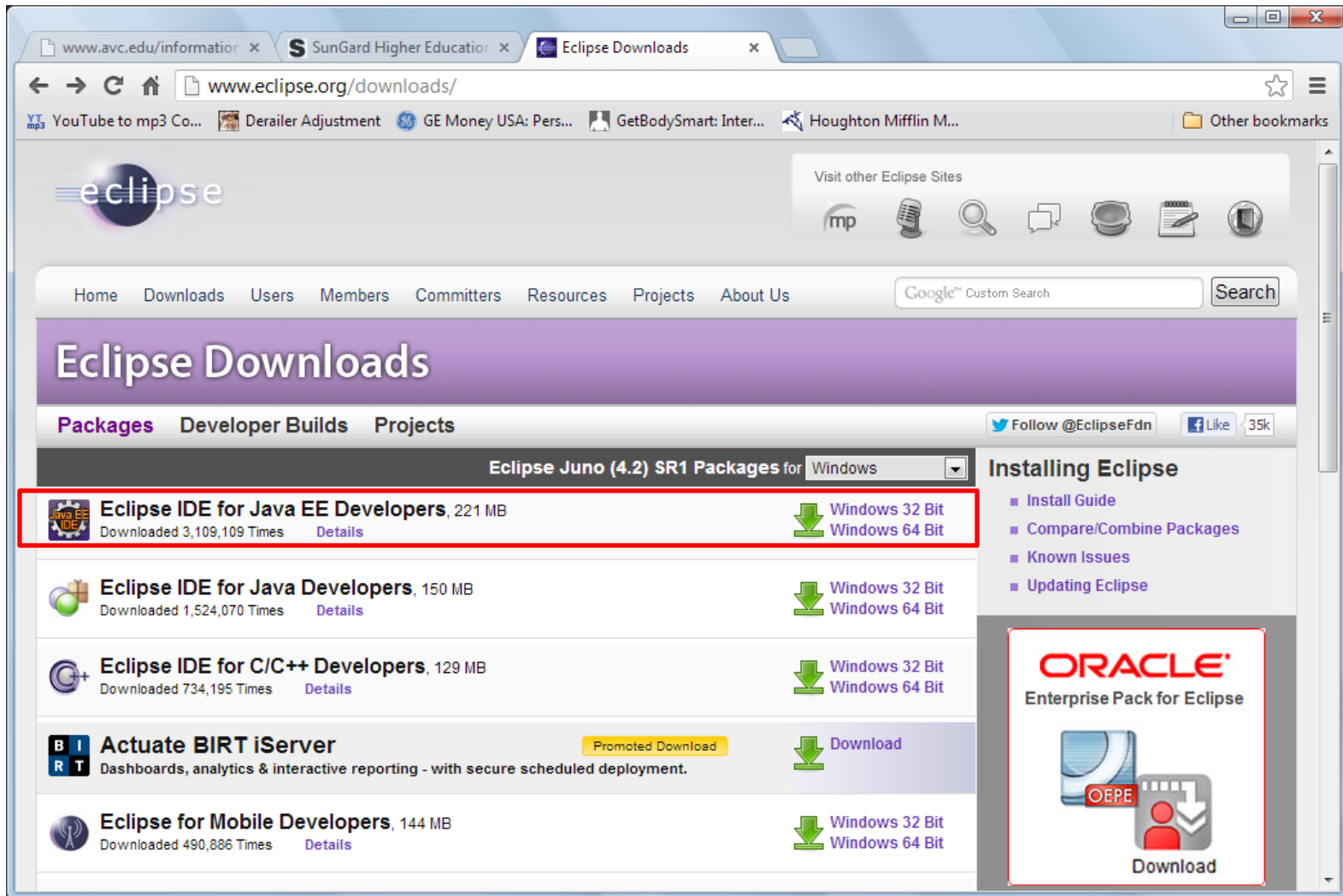
- [New to Java?](#)
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- [Developer Training](#)
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Java magazine **NEW!** Get it now for FREE! [Subscribe Today](#)

You can also download demos/samples and documentation from the same web page

Download Eclipse

[Eclipse is an IDE: Integrated Development Environment](#)



The screenshot shows the Eclipse Downloads page in a web browser. The browser's address bar displays www.eclipse.org/downloads/. The page features the Eclipse logo and a navigation menu with links to Home, Downloads, Users, Members, Committers, Resources, Projects, and About Us. A search bar is also present. The main content area is titled "Eclipse Downloads" and includes tabs for Packages, Developer Builds, and Projects. A dropdown menu is set to "Eclipse Juno (4.2) SR1 Packages for Windows". The first package, "Eclipse IDE for Java EE Developers, 221 MB", is highlighted with a red box. It shows a download count of 3,109,109 and links for Windows 32 Bit and Windows 64 Bit. Other packages listed include "Eclipse IDE for Java Developers" (150 MB), "Eclipse IDE for C/C++ Developers" (129 MB), "Actuate BIRT iServer" (Promoted Download), and "Eclipse for Mobile Developers" (144 MB). On the right side, there is a section titled "Installing Eclipse" with links to an Install Guide, Compare/Combine Packages, Known Issues, and Updating Eclipse. At the bottom right, there is an advertisement for the "ORACLE Enterprise Pack for Eclipse" (OEPE) with a download button.

www.eclipse.org/downloads/

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Eclipse Downloads

Packages Developer Builds Projects

Eclipse Juno (4.2) SR1 Packages for Windows

Eclipse IDE for Java EE Developers, 221 MB
Downloaded 3,109,109 Times [Details](#)
Windows 32 Bit
Windows 64 Bit

Eclipse IDE for Java Developers, 150 MB
Downloaded 1,524,070 Times [Details](#)
Windows 32 Bit
Windows 64 Bit

Eclipse IDE for C/C++ Developers, 129 MB
Downloaded 734,195 Times [Details](#)
Windows 32 Bit
Windows 64 Bit

Actuate BIRT iServer
Dashboards, analytics & interactive reporting - with secure scheduled deployment.
Download

Eclipse for Mobile Developers, 144 MB
Downloaded 490,886 Times [Details](#)
Windows 32 Bit
Windows 64 Bit

Installing Eclipse

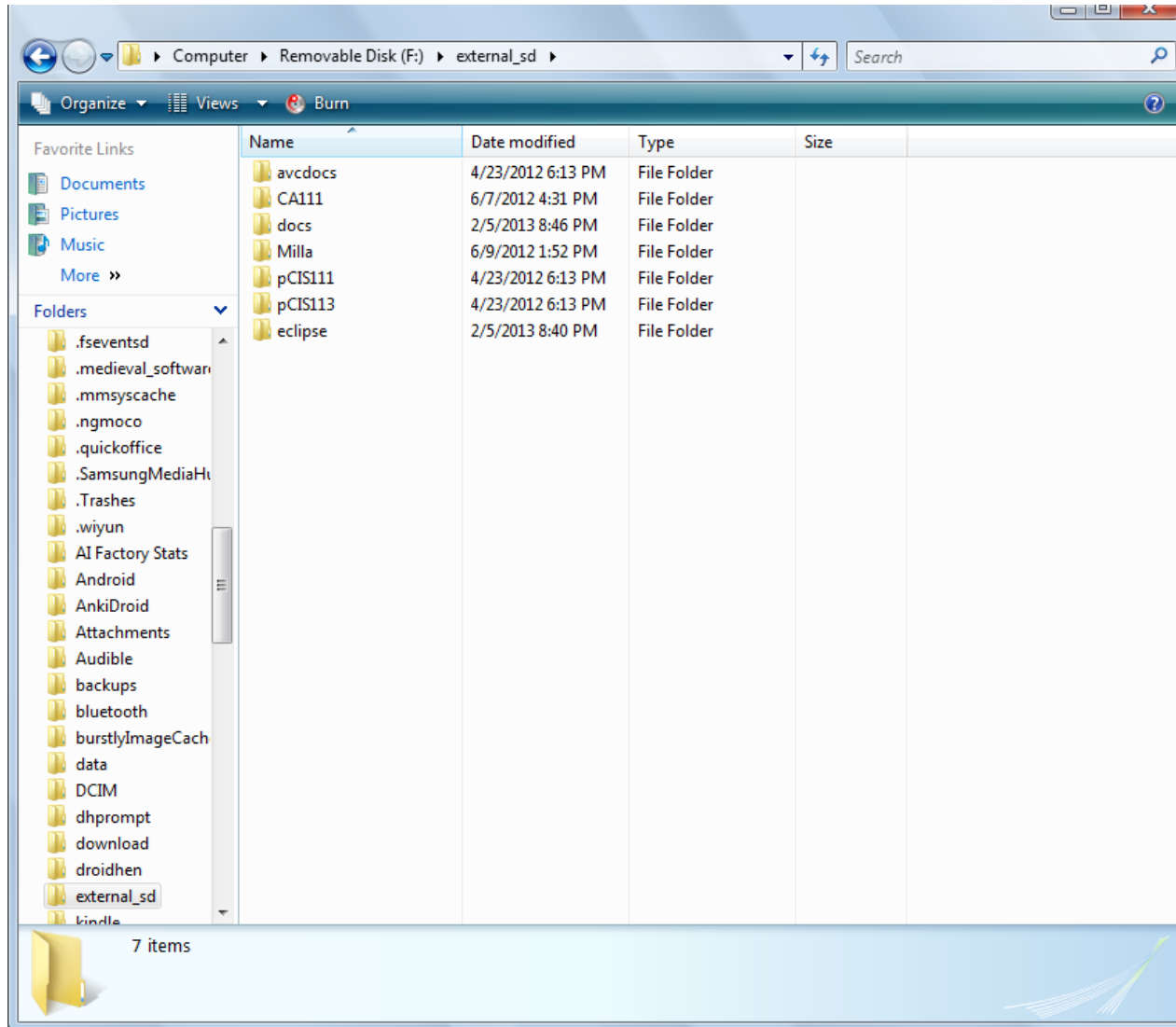
- Install Guide
- Compare/Combine Packages
- Known Issues
- Updating Eclipse

ORACLE Enterprise Pack for Eclipse

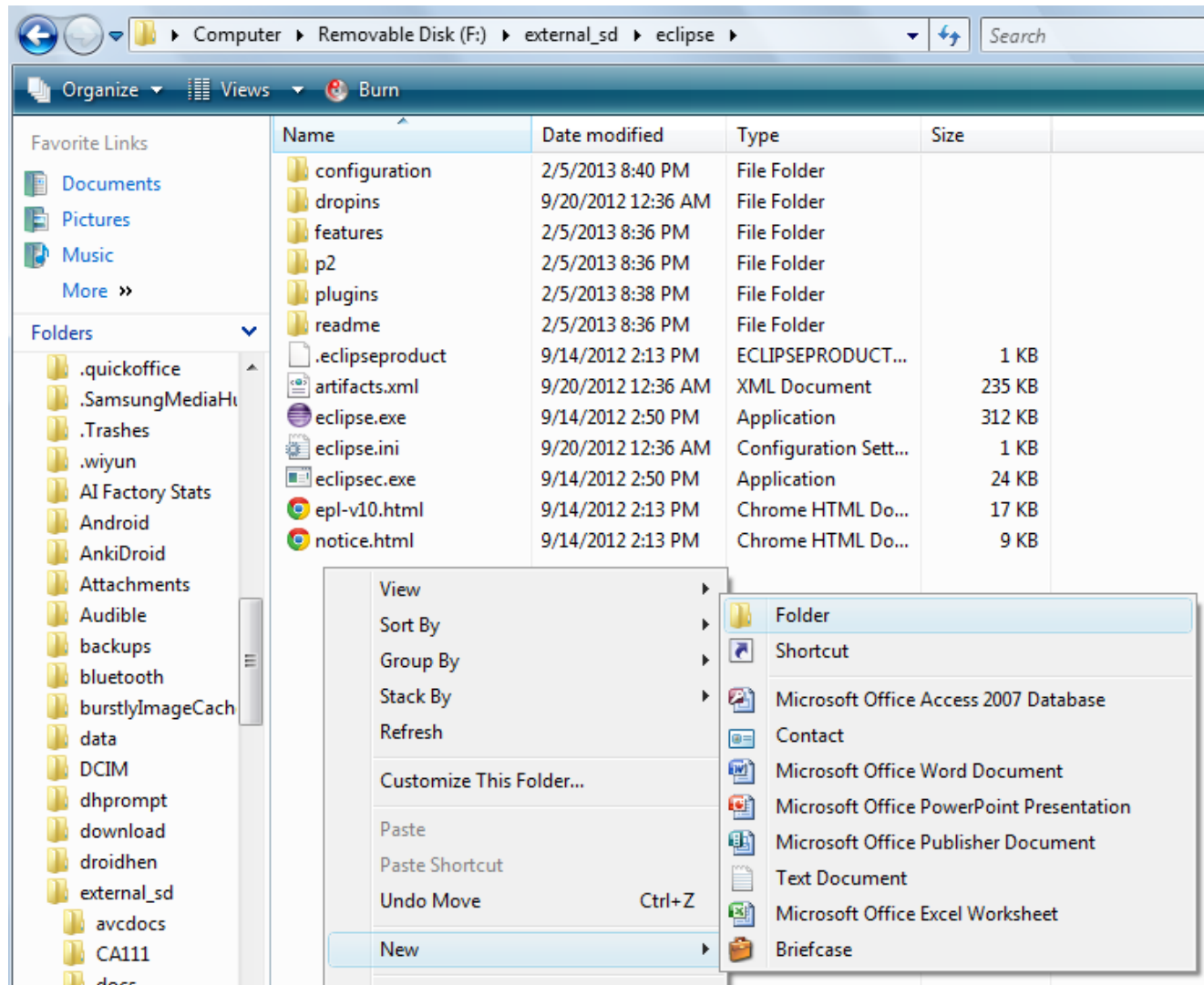
Download

Unzip to your flash drive that you will bring to class

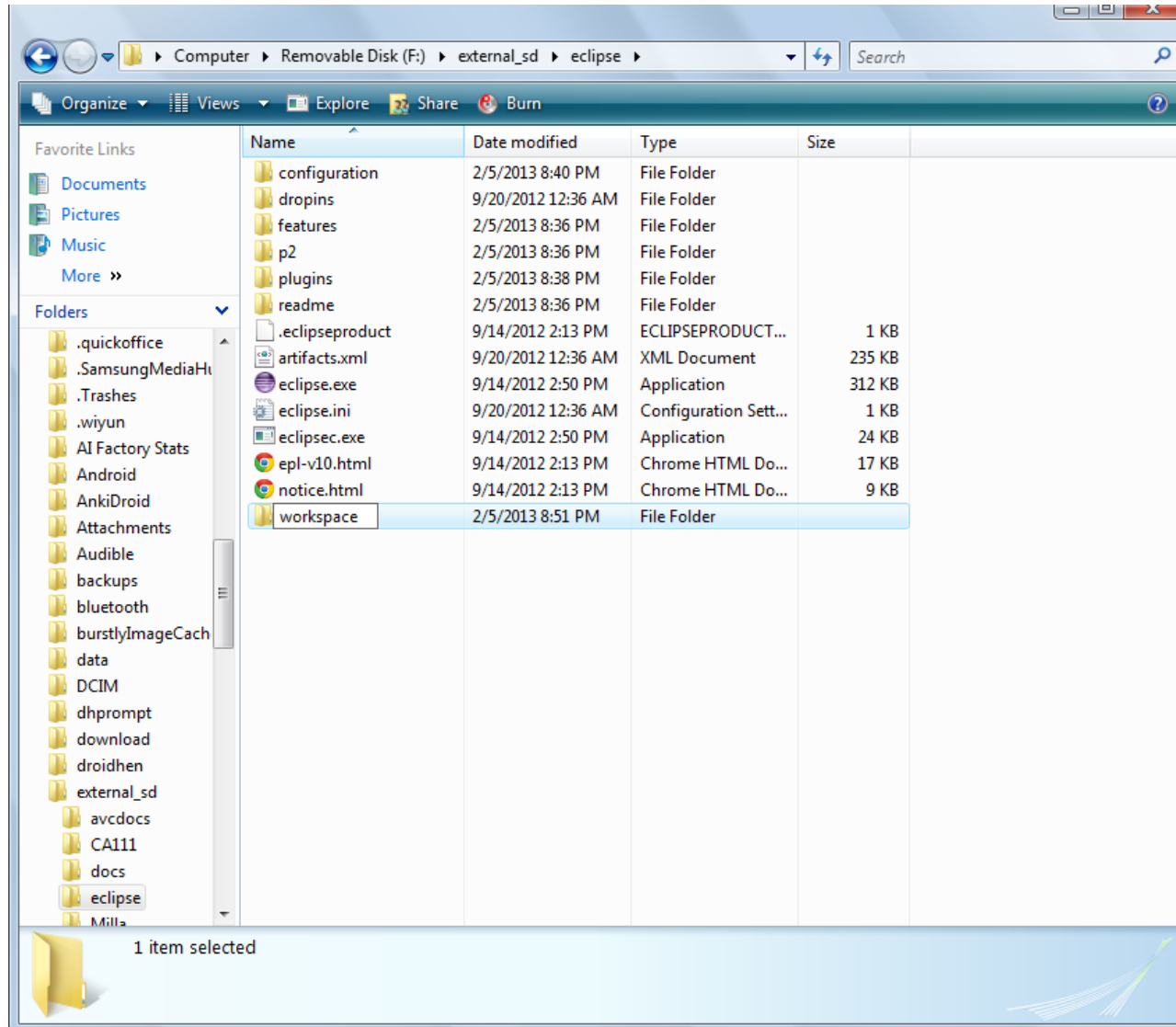
Extract Eclipse to your thumb drive



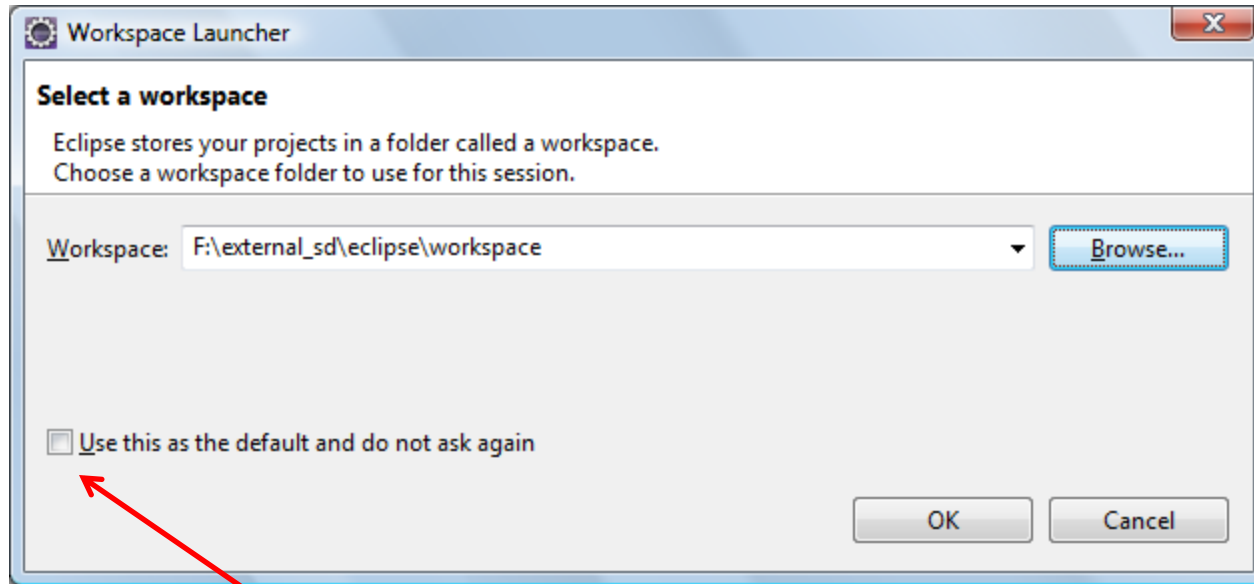
Create a folder named workspace in the Eclipse folder



Name the folder workspace



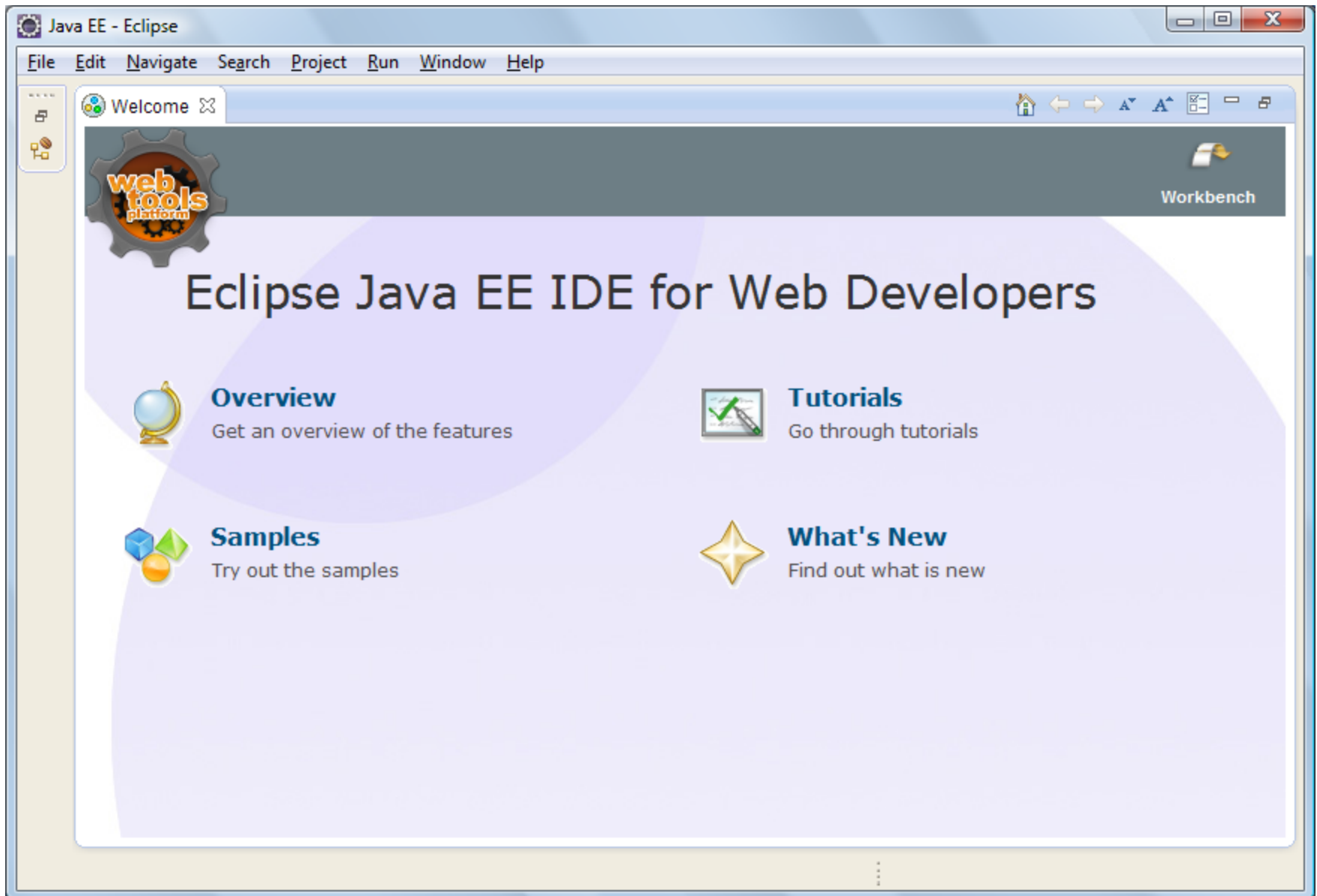
Run Eclipse



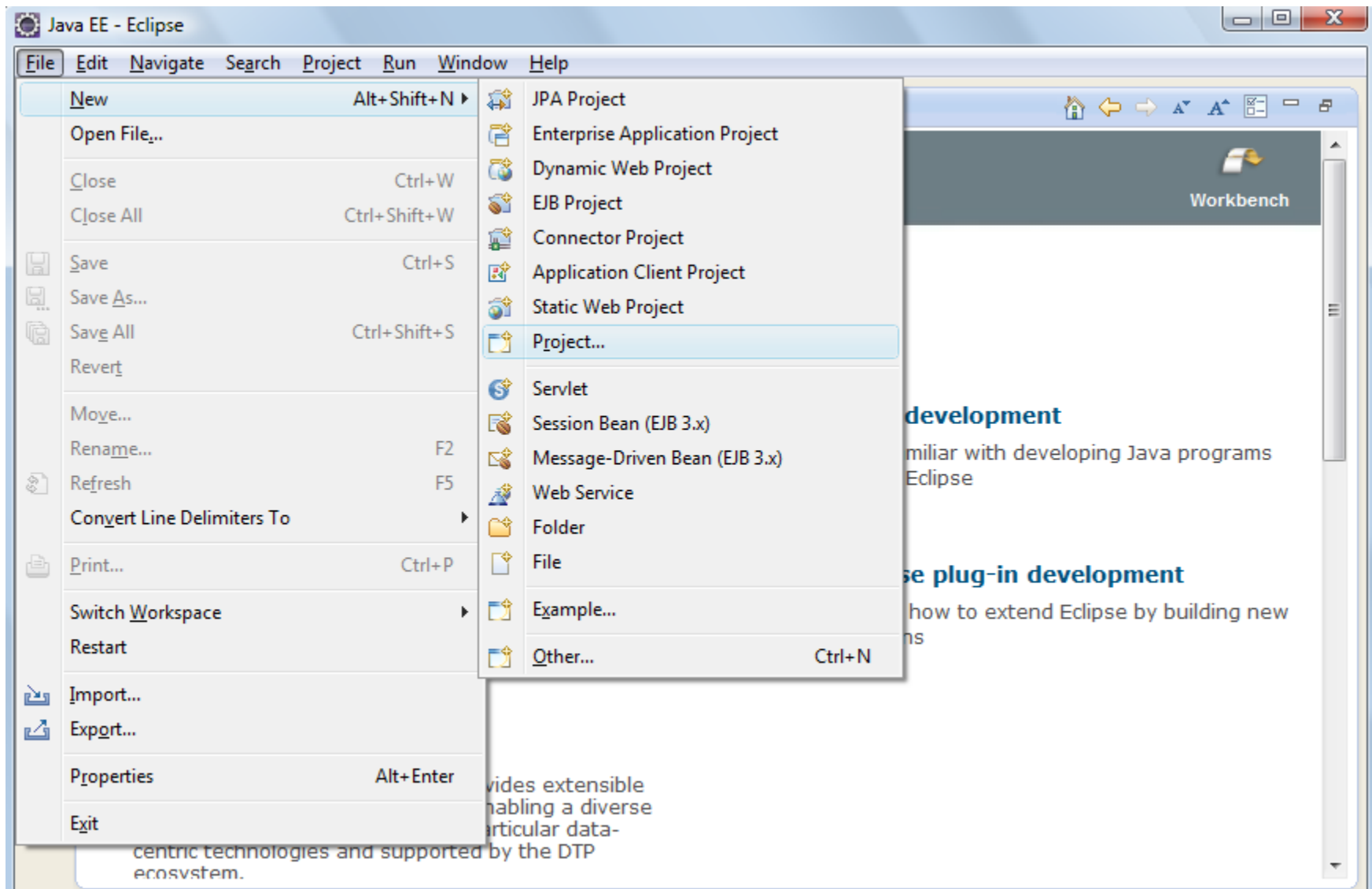
- Browse to your new workspace folder and select it.
- Do not check the “Use this as the default and do not ask again” checkbox

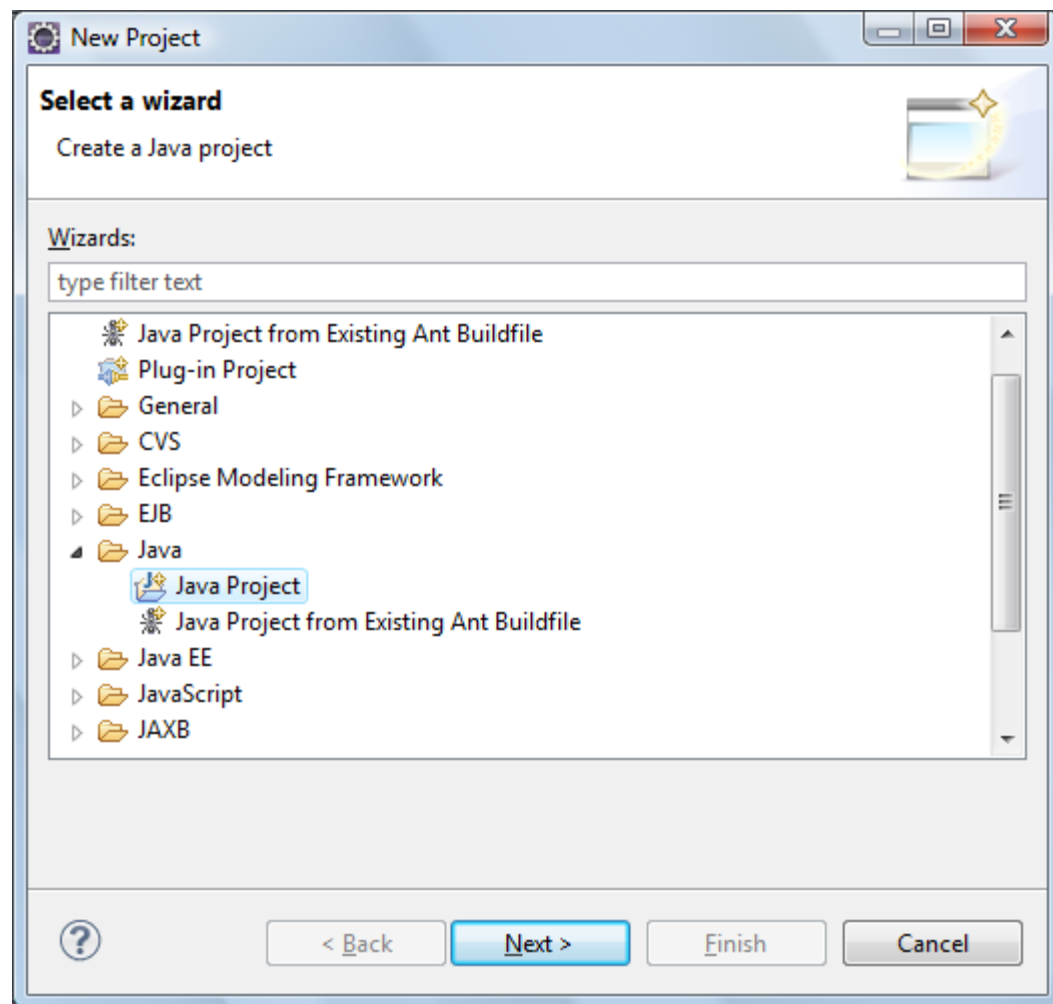
The Eclipse workspace

- This is your project directory where you will store the code for all of your class projects
- We will learn about project management throughout the class.
- Note: Eclipse is not covered in your textbook!



Create a new project





- Name your project

- Select either

- Leave the other settings alone

- Click Finish

Create a Java Project
Create a Java project in the workspace or in an external location.

Project name: HelloWorld

☒ Use default location
Location: F:\external_sd\eclipse\workspace\HelloWorld [Browse...](#)

JRE

☒ Use an execution environment JRE: JavaSE-1.7
☐ Use a project specific JRE: jre7
☐ Use default JRE (currently 'jre7') [Configure JREs...](#)

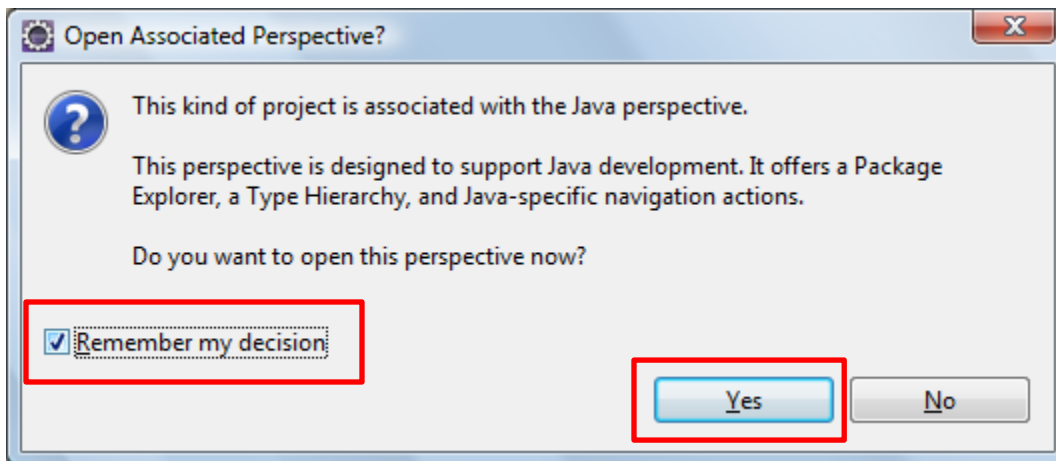
Project layout

☐ Use project folder as root for sources and class files
☒ Create separate folders for sources and class files [Configure default...](#)

Working sets

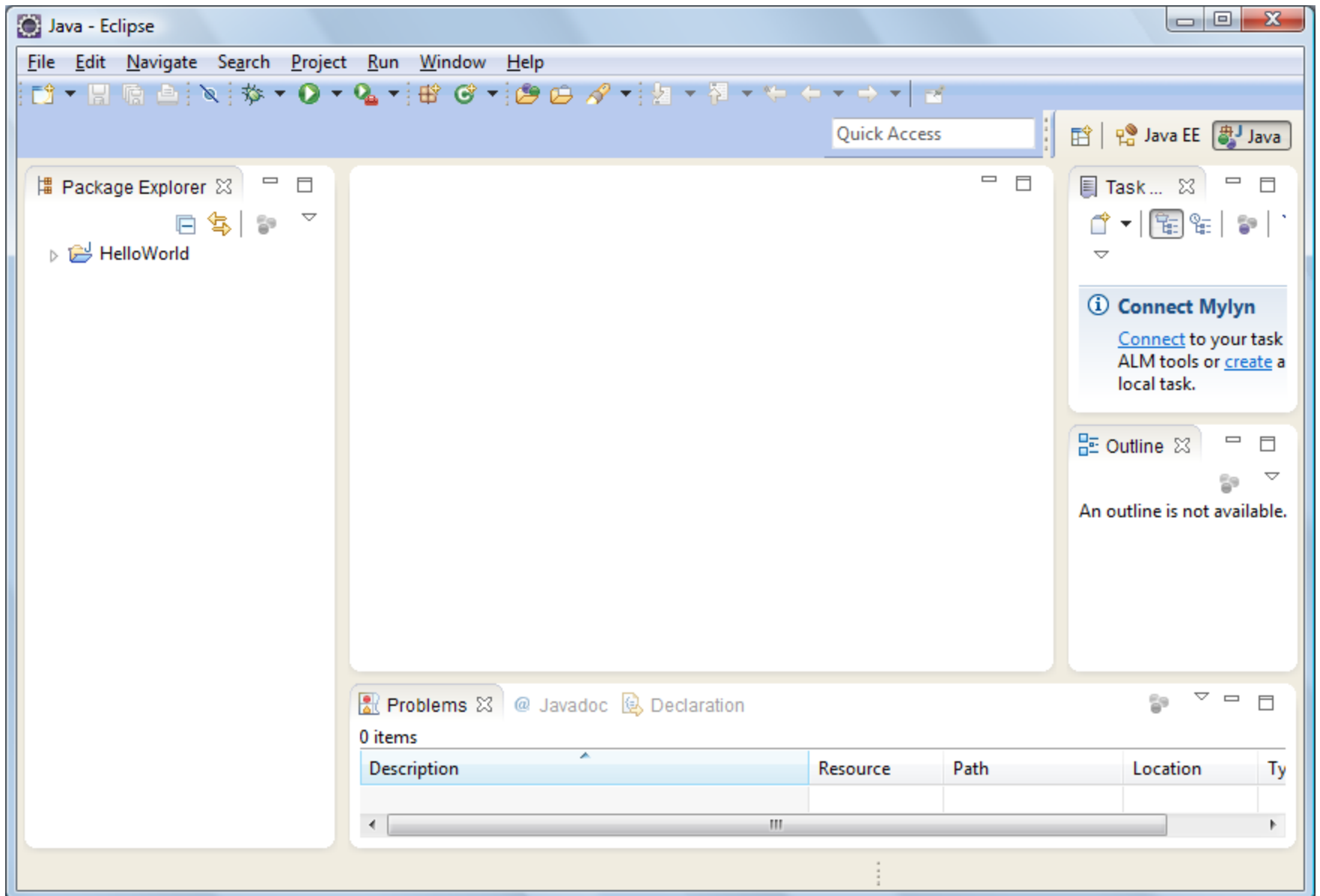
☐ Add project to working sets
Working sets: [Select...](#)

[?](#) [< Back](#) [Next >](#) **Finish** [Cancel](#)

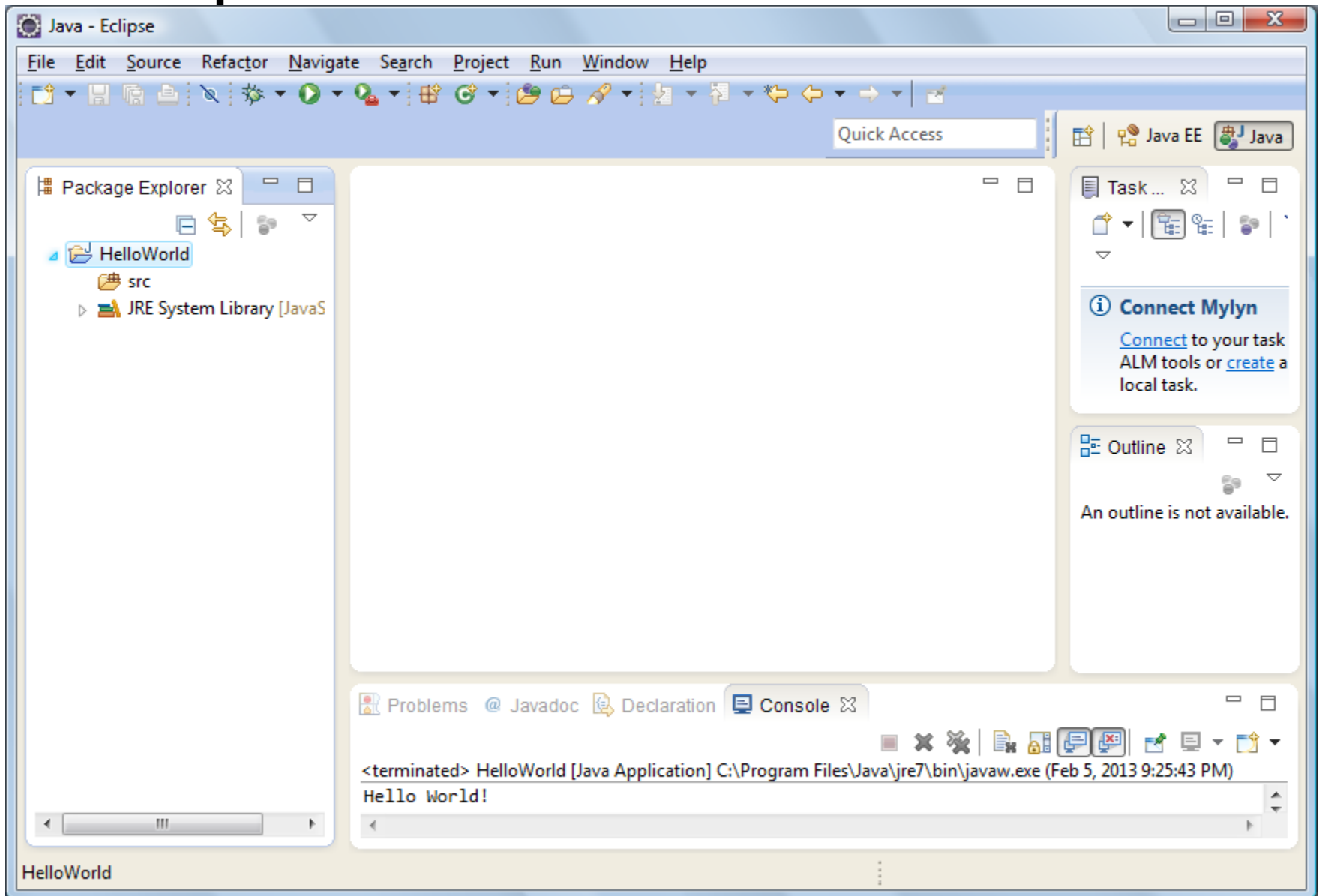


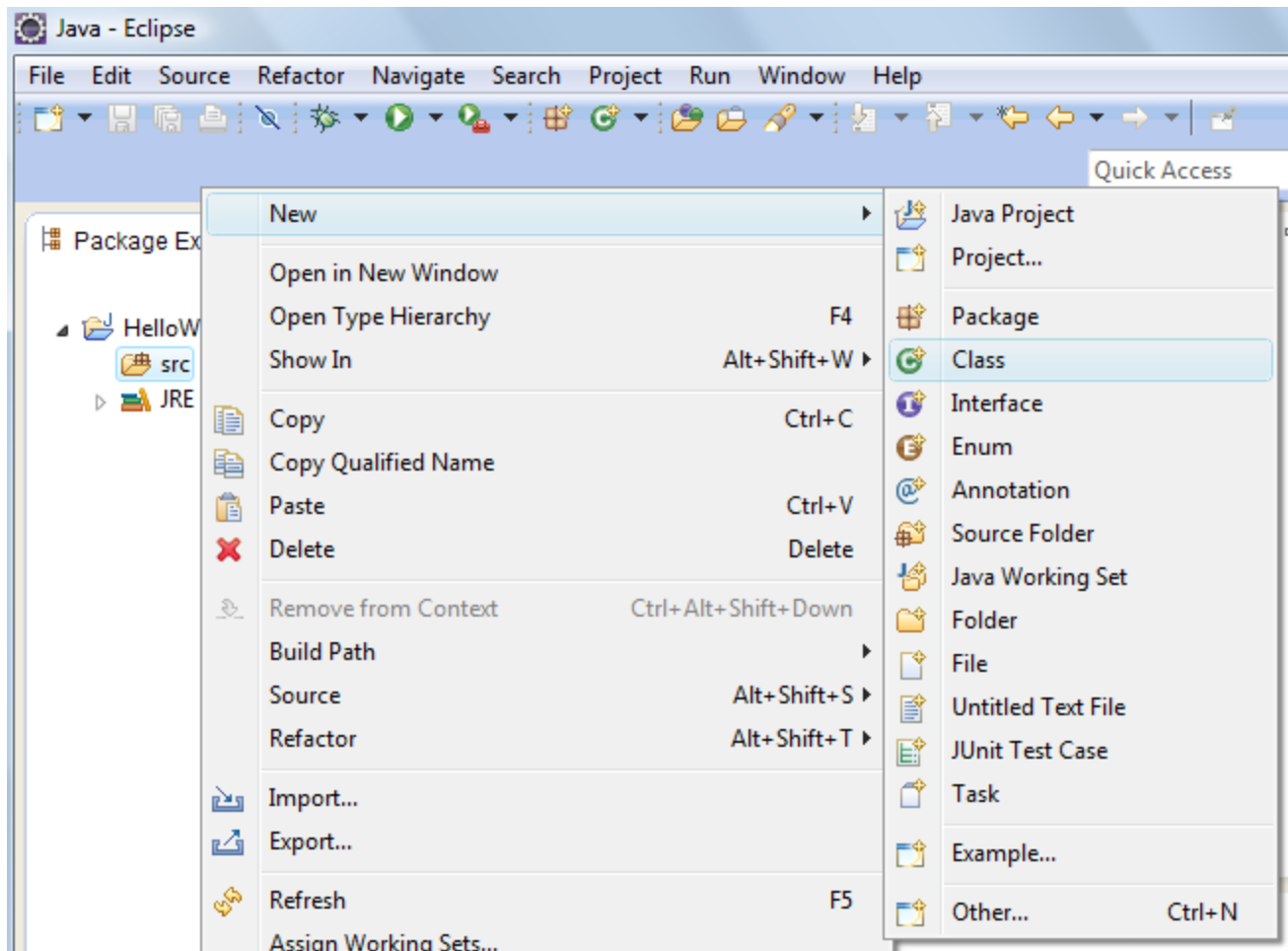
Close the Welcome screen





Expand the tree “HelloWorld”





- Right click src (source) and select New -> Class
- Note: the menu will change based on past selections

- Name it

- Make sure this box is checked

- Click Finish

New Java Class

The use of the default package is discouraged.

Source folder: HelloWorld/src Browse...

Package: (default) Browse...

☐ Enclosing type: Browse...

Name: HelloWorld

Modifiers: ☒ public ☐ default ☐ private ☐ protected
☐ abstract ☐ final ☐ static

Superclass: java.lang.Object Browse...

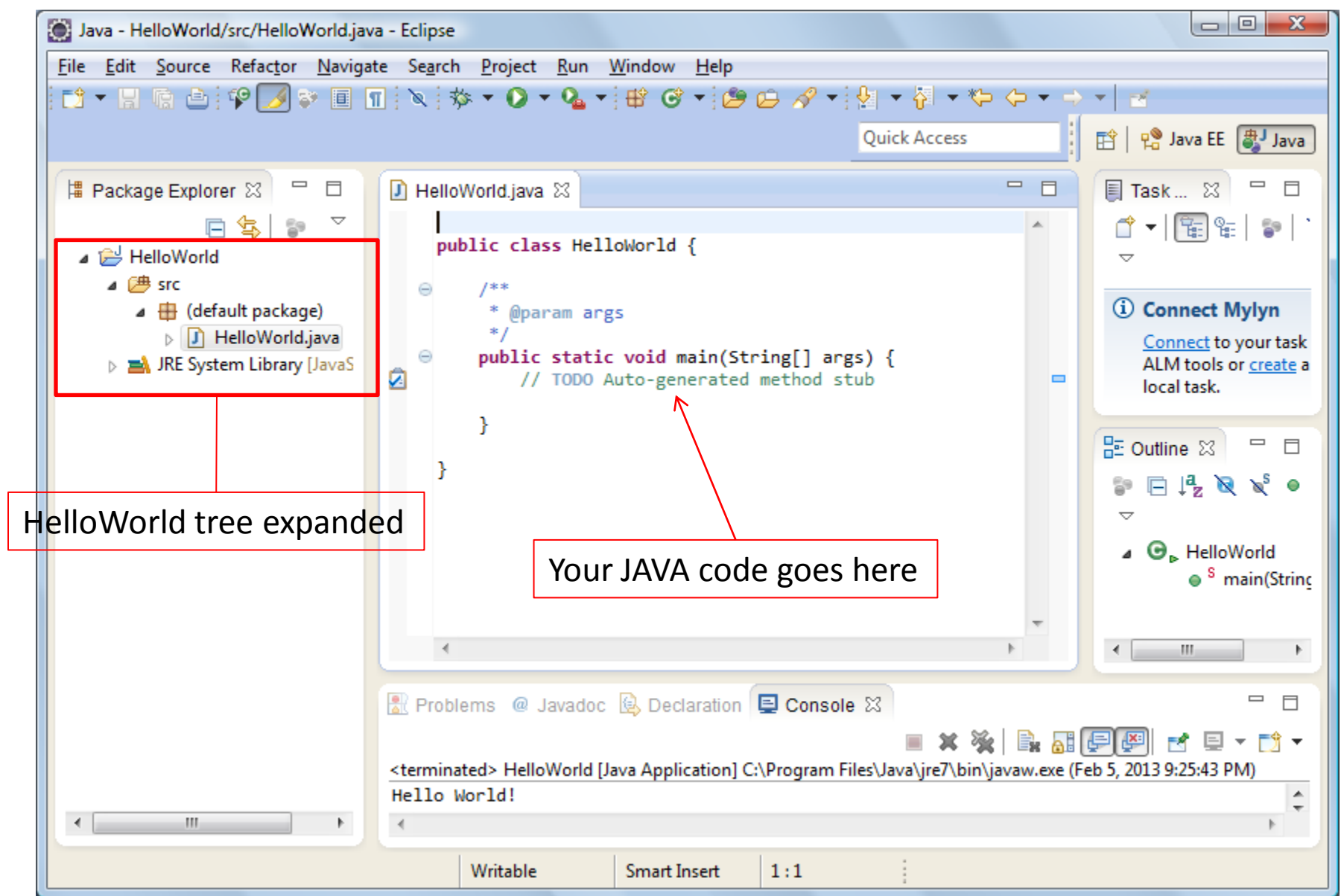
Interfaces: Add...
Remove

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

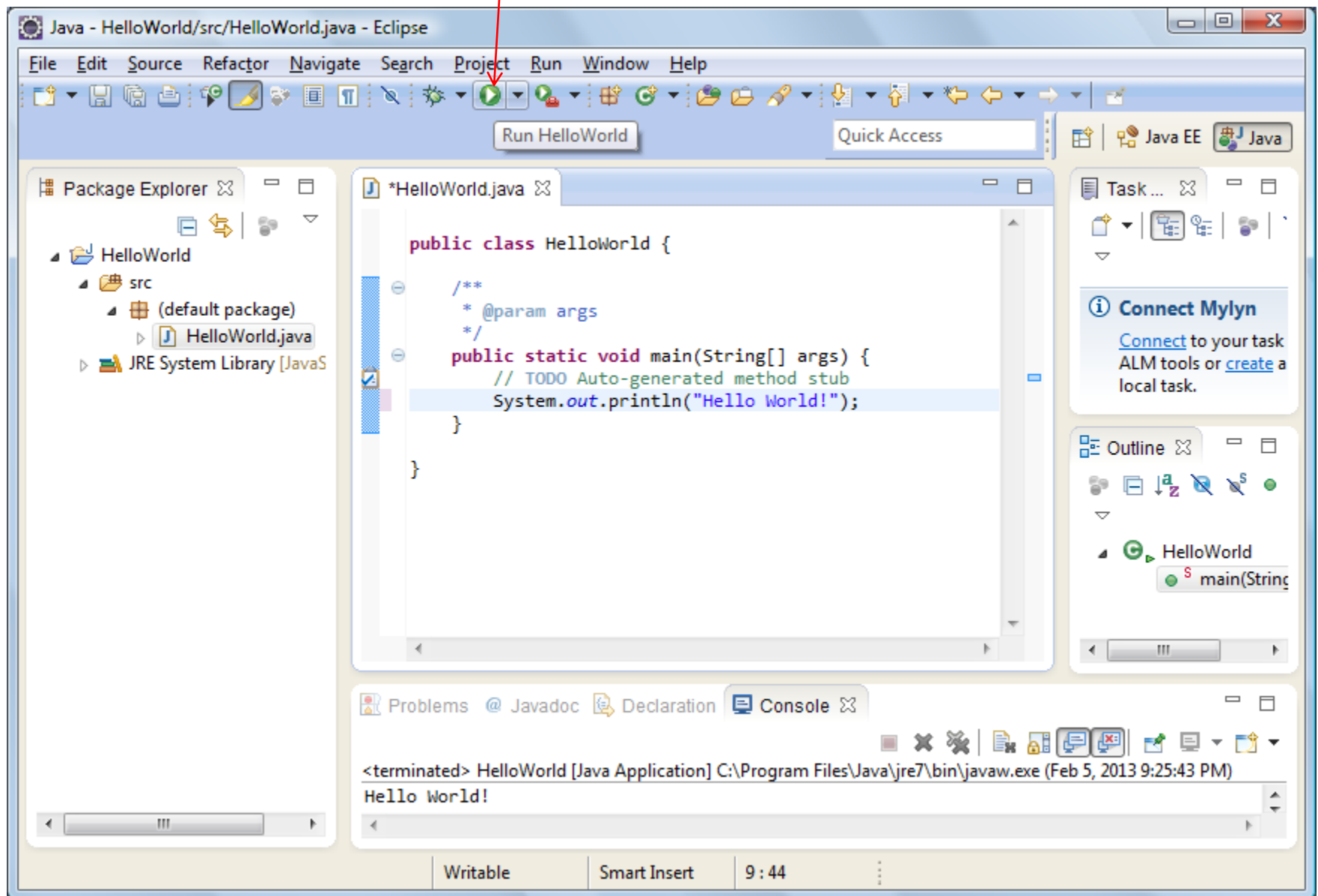
? Finish Cancel

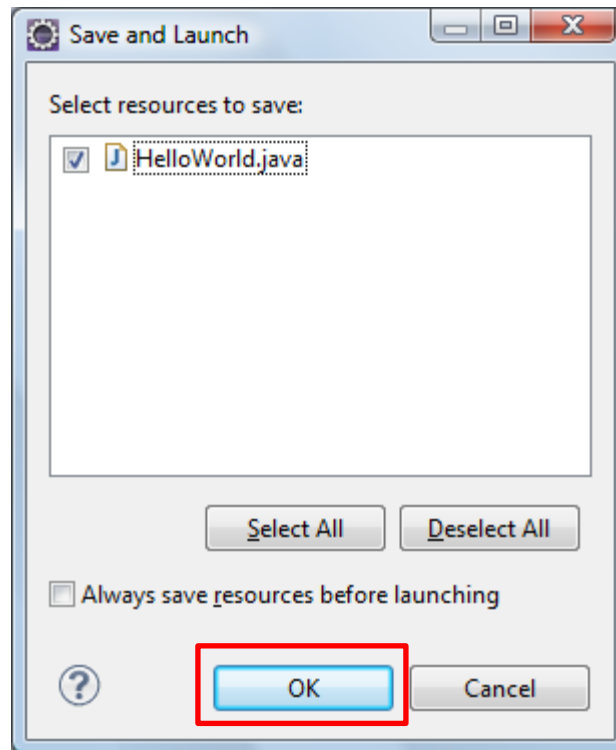


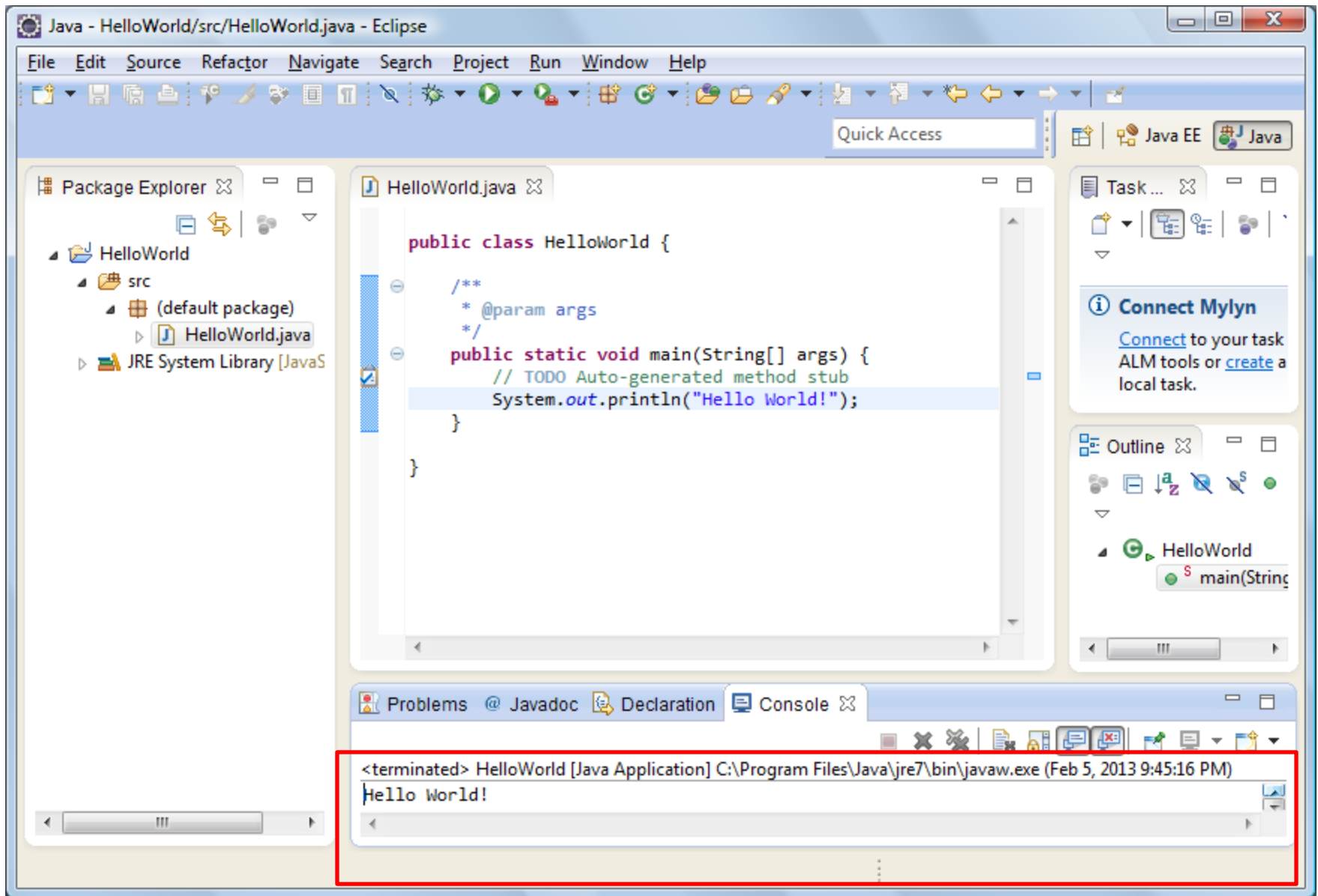
Enter the following JAVA statement after // TODO... and before the first curly brace }

System.out.println("Hello World!");

Click the 'Run' button

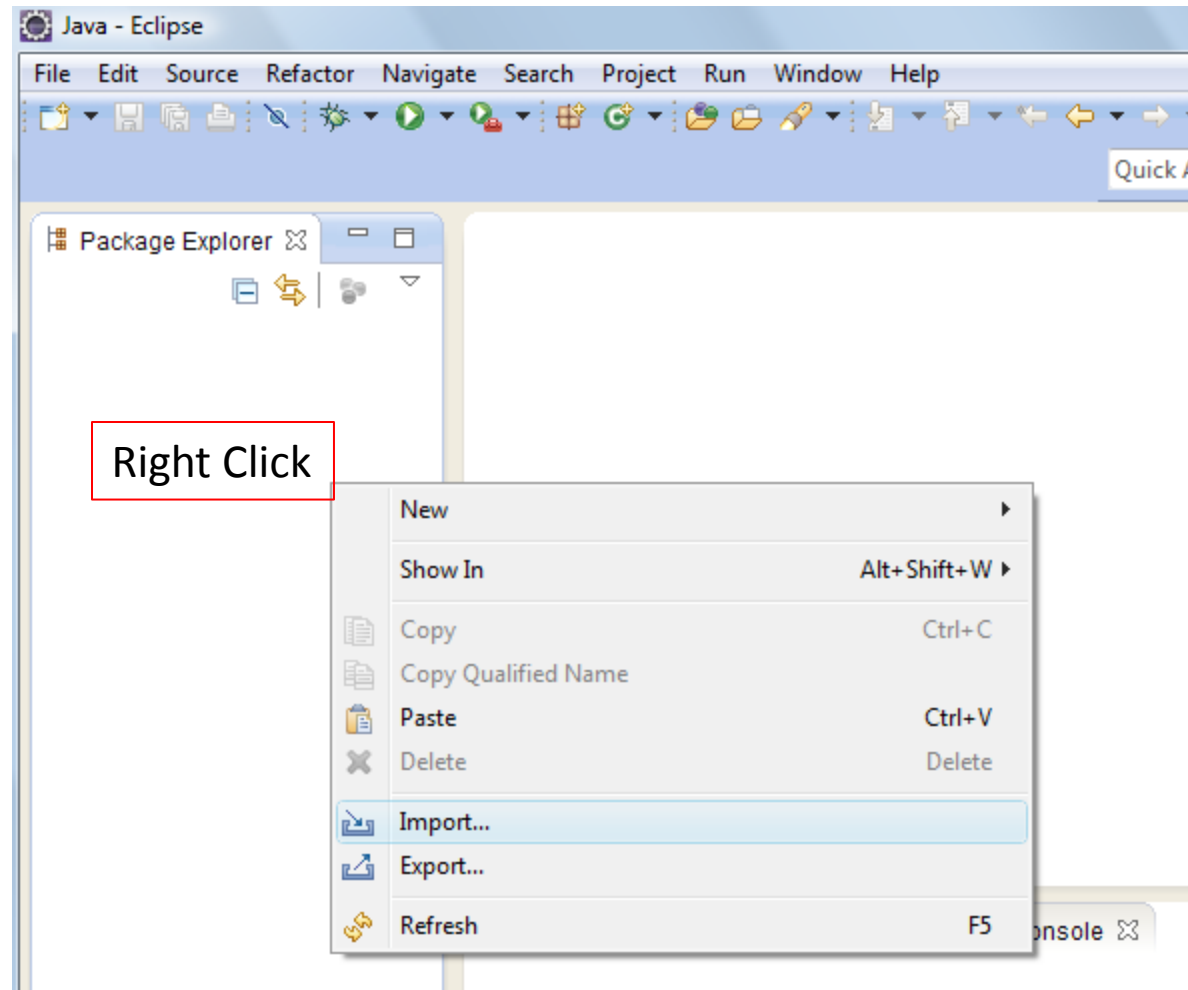




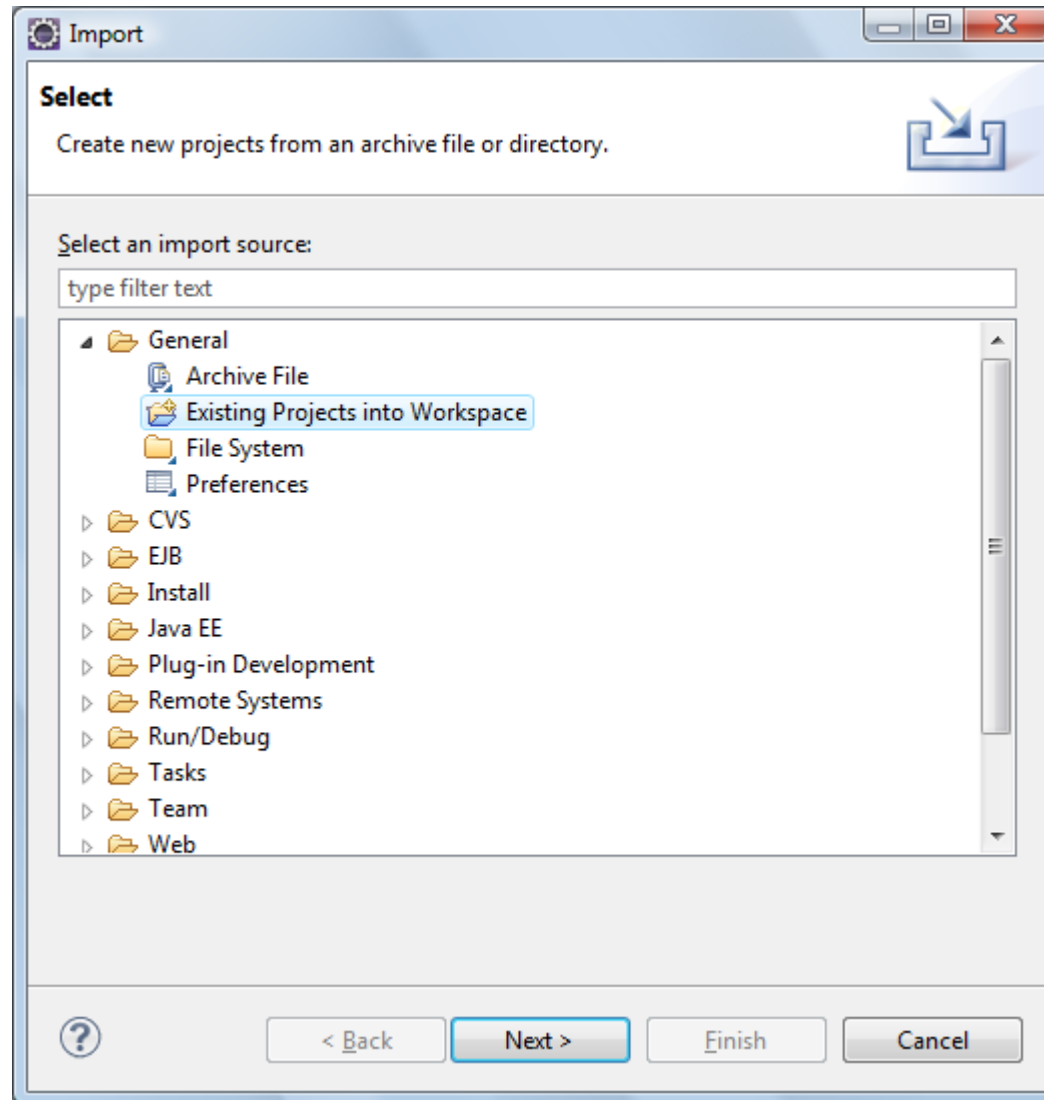


Congratulations, you have just created and run a simple JAVA program in Eclipse!

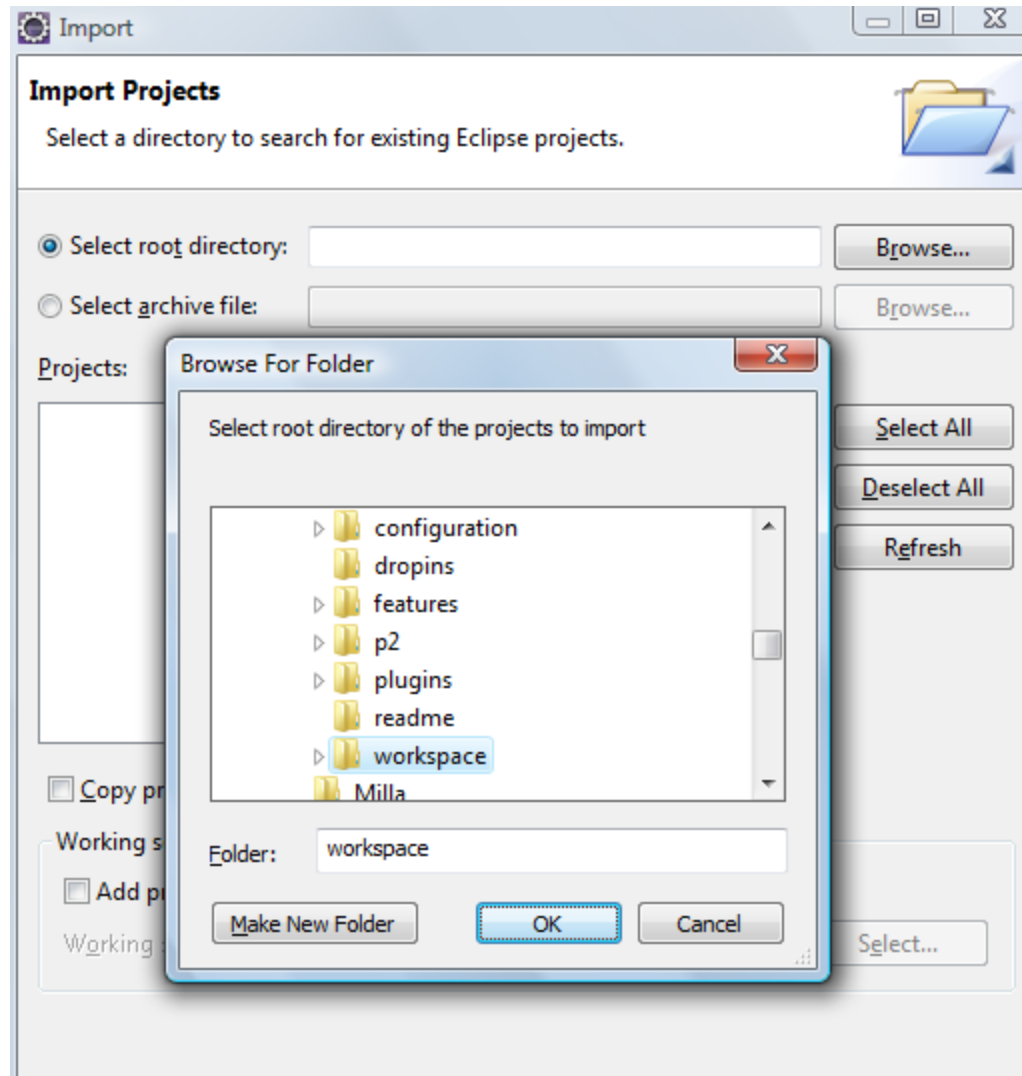
Importing Projects in Eclipse



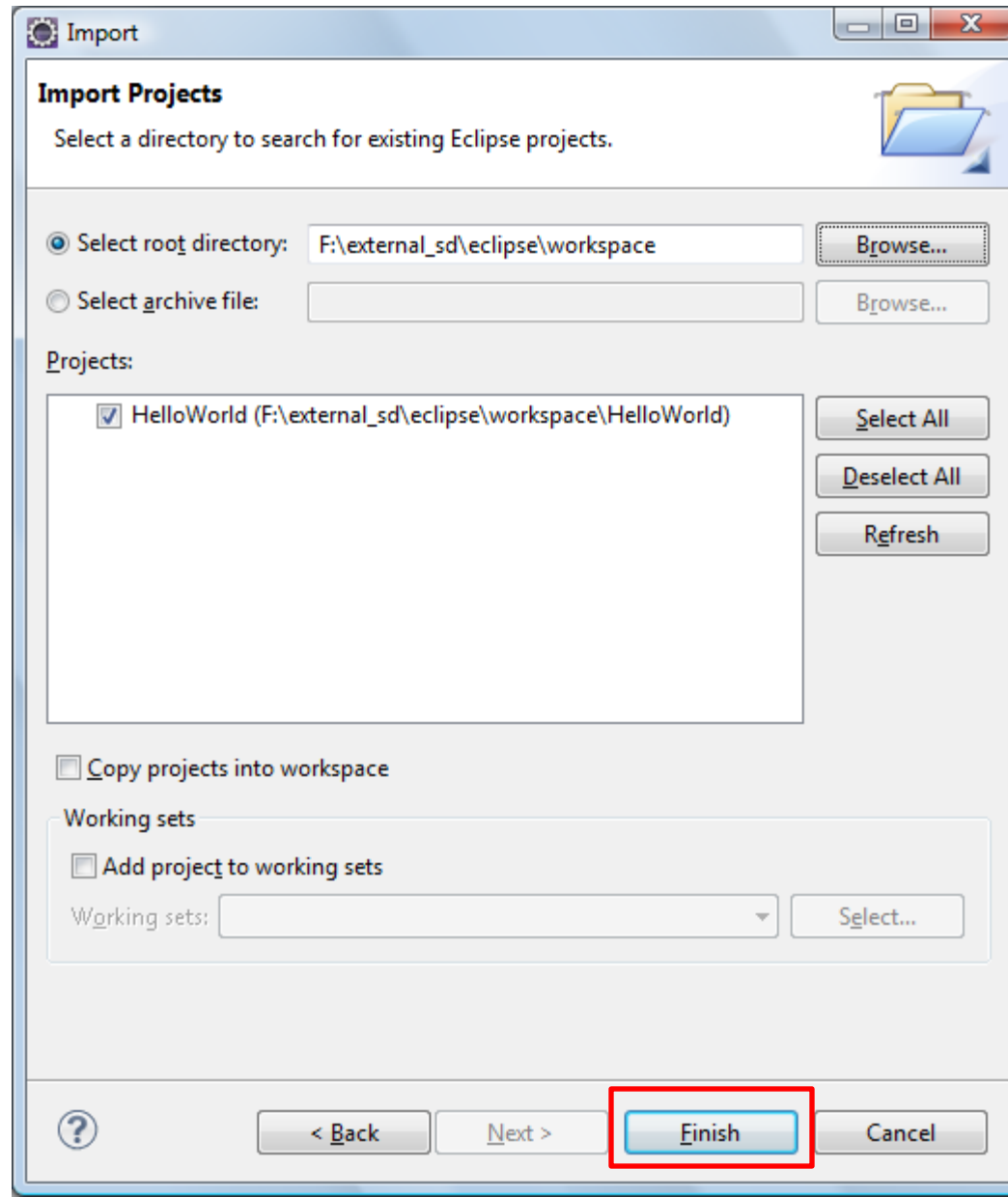
Select Existing Projects in Workspace



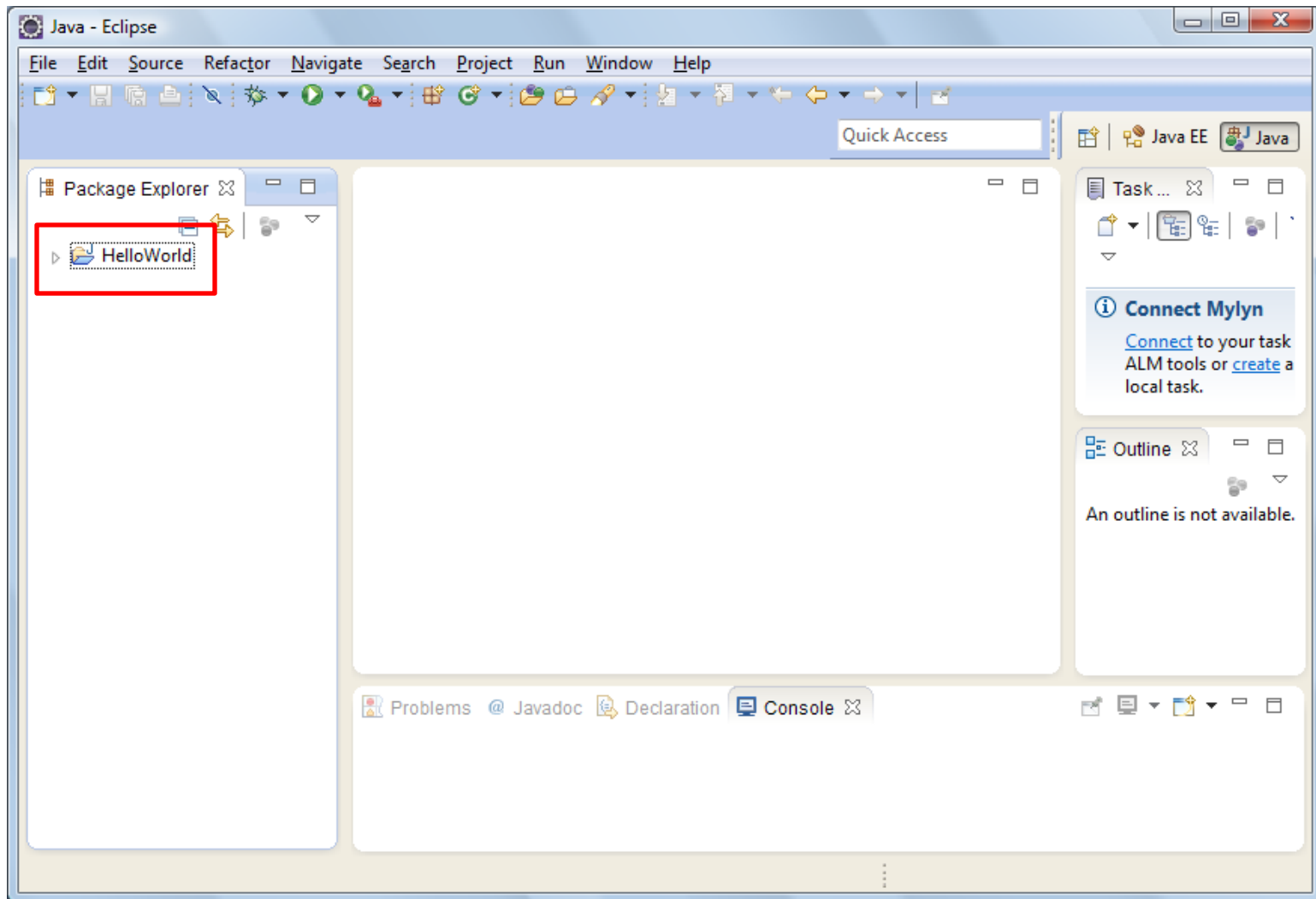
Browse to your workspace



Select the projects to include



Notice the selected projects are in the Package Explorer Window



Get to know a compression utility

The screenshot shows the official 7-Zip website. The browser window has a single tab titled '7-Zip' and the address bar shows 'www.7-zip.org'. The page layout includes a sidebar on the left with navigation links like 'Home', '7z Format', 'LZMA SDK', 'Download', 'FAQ', 'Support', and 'Links'. A 'Donate' button and the 'sourceforge' logo are also present. The main content area is titled '7-Zip' and describes it as a file archiver with a high compression ratio. It provides download links for '7-Zip 9.20 (2010-11-18) for Windows', with a table showing two options: a 32-bit x86 .exe file (1 MB) and a 64-bit x64 .msi file (1 MB). Below this, it mentions that the links redirect to SourceForge.net. The 'License' section states that 7-Zip is open source software under the GNU LGPL license. The 'The main features of 7-Zip' section lists several capabilities, including high compression ratio with LZMA and LZMA2, support for various formats (7z, XZ, BZIP2, GZIP, TAR, ZIP, WIM), strong AES-256 encryption, self-extracting capability, integration with Windows Shell, a powerful file manager, and a command-line version. On the right side of the page, there are several boxes for newer versions: '7-Zip 9.30 alpha' (2012-10-26), '7-Zip 9.25 alpha' (2011-09-16), '7-Zip 9.22 beta' (2011-04-18), and '7-Zip 9.20' (2010-11-18), each with links to forum discussions or download pages.

7-Zip

7-Zip is a file archiver with a high compression ratio.

Download 7-Zip 9.20 (2010-11-18) for Windows:

Link	Type	Windows	Size
Download	.exe	32-bit x86	1 MB
Download	.msi	64-bit x64	1 MB

The download links above redirect you to download pages on SourceForge.net

License

7-Zip is **open source** software. Most of the source code is under the **GNU LGPL** license. The unRAR code is under a mixed license: GNU LGPL + unRAR restrictions. Check license information here: [7-Zip license](#).

You can use 7-Zip on any computer, including a computer in a commercial organization. You don't need to register or pay for 7-Zip.

The main features of 7-Zip

- High compression ratio in [7z format](#) with **LZMA** and **LZMA2** compression
- Supported formats:
 - Packing / unpacking: 7z, XZ, BZIP2, GZIP, TAR, ZIP and WIM
 - Unpacking only: ARJ, CAB, CHM, CPIO, CramFS, DEB, DMG, FAT, HFS, ISO, LZH, LZMA, MBR, MSI, NSIS, NTFS, RAR, RPM, SquashFS, UDF, VHD, WIM, XAR and Z.
- For ZIP and GZIP formats, **7-Zip** provides a compression ratio that is 2-10 % better than the ratio provided by PKZip and WinZip
- Strong AES-256 encryption in 7z and ZIP formats
- Self-extracting capability for 7z format
- Integration with Windows Shell
- Powerful File Manager
- Powerful command line version

Windows has its own compression tools or you can use 3rd party tools such as 7-zip
You will need to use a compression tool on your homework/source files and attach them to your e-mail... Yes, all homework needs to be submitted via e-mail!

Homework

- Now your job is to show me an example of what you know. Create a simple program that converts (F)ahrenheit to (C)elsius for the temperatures: 10, 20, 30, ..., 90, 100 and outputs them to the console.
 - Name your project and class FtoC
 - Store the integer (Fahrenheit) values in an array
 - Use a 'while' loop to output the conversion to the console with comments like:
68 degrees Fahrenheit is 20 degrees Celsius

The equation(s) is for the conversion are

$$F = (9/5)*C + 32$$

$$C = (5/9)*(F - 32)$$

- Zip your Eclipse project folder and submit it via e-mail to avc.dr.lee@gmail.com prior to the start of next weeks class.

You may find some of these video tutorials useful

<http://www.javatutorialonline.com/p/java-programming-tutorial.html>