

Java Environment

CSCI 201L

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[HTTP://WWW-SCF.USC.EDU/~CSCI201](http://www-scf.usc.edu/~csci201)

Outline

- Java Environment
- Eclipse Tutorial
- Program

History of Java



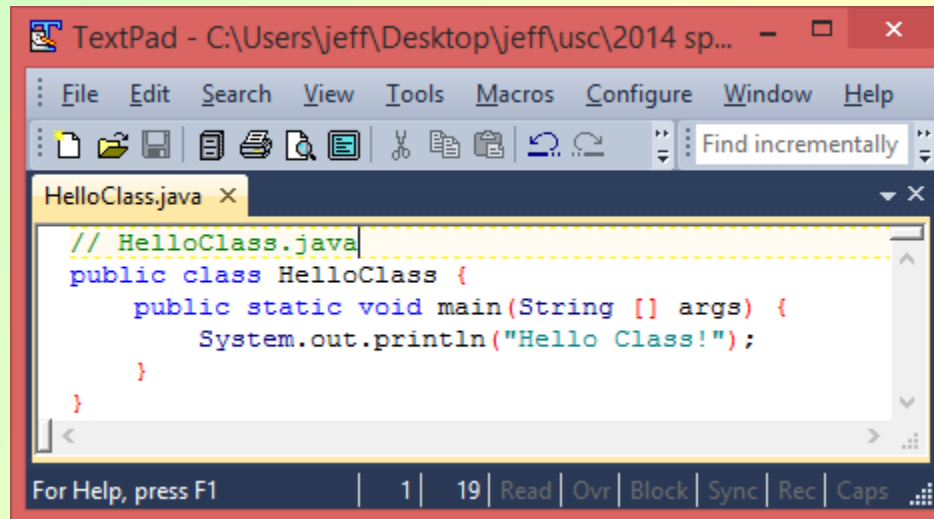
- Java was created by Sun Microsystems
 - › First version 1.0 was released in 1996
- Sun Microsystems was bought by Oracle in 2010
- Java has gone through numerous major and minor releases
 - › Current major version is Java 8, released in 2013 with few updates since
- Java is open source
- <http://java.sun.com>

Compiling

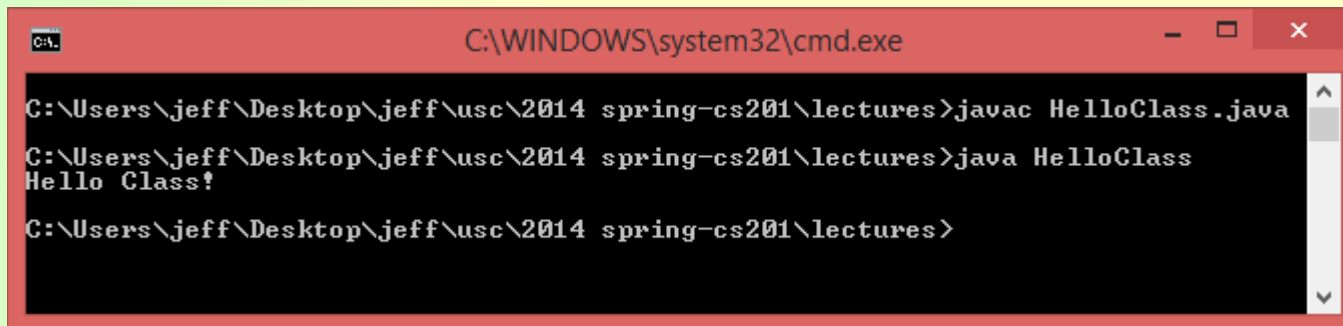
- Java has a motto of “**write once, run anywhere**”
 - › When code is compiled, it produces byte code instead of a binary executable
 - › The Java Virtual Machine (JVM) is compiled for a specific operating system, then allowing for the byte code to run on any operating system (for which there is a JVM)
 - › Since the JVM is written in a native language, there may be subtle, or not-so-subtle, differences when run on different JVMs
- Java may run slightly slower than compiled native languages

Command Line

- You can write with any text editor you want and compile it from a command line that has the Java Development Kit (JDK) installed



```
// HelloClass.java
public class HelloClass {
    public static void main(String [] args) {
        System.out.println("Hello Class!");
    }
}
```

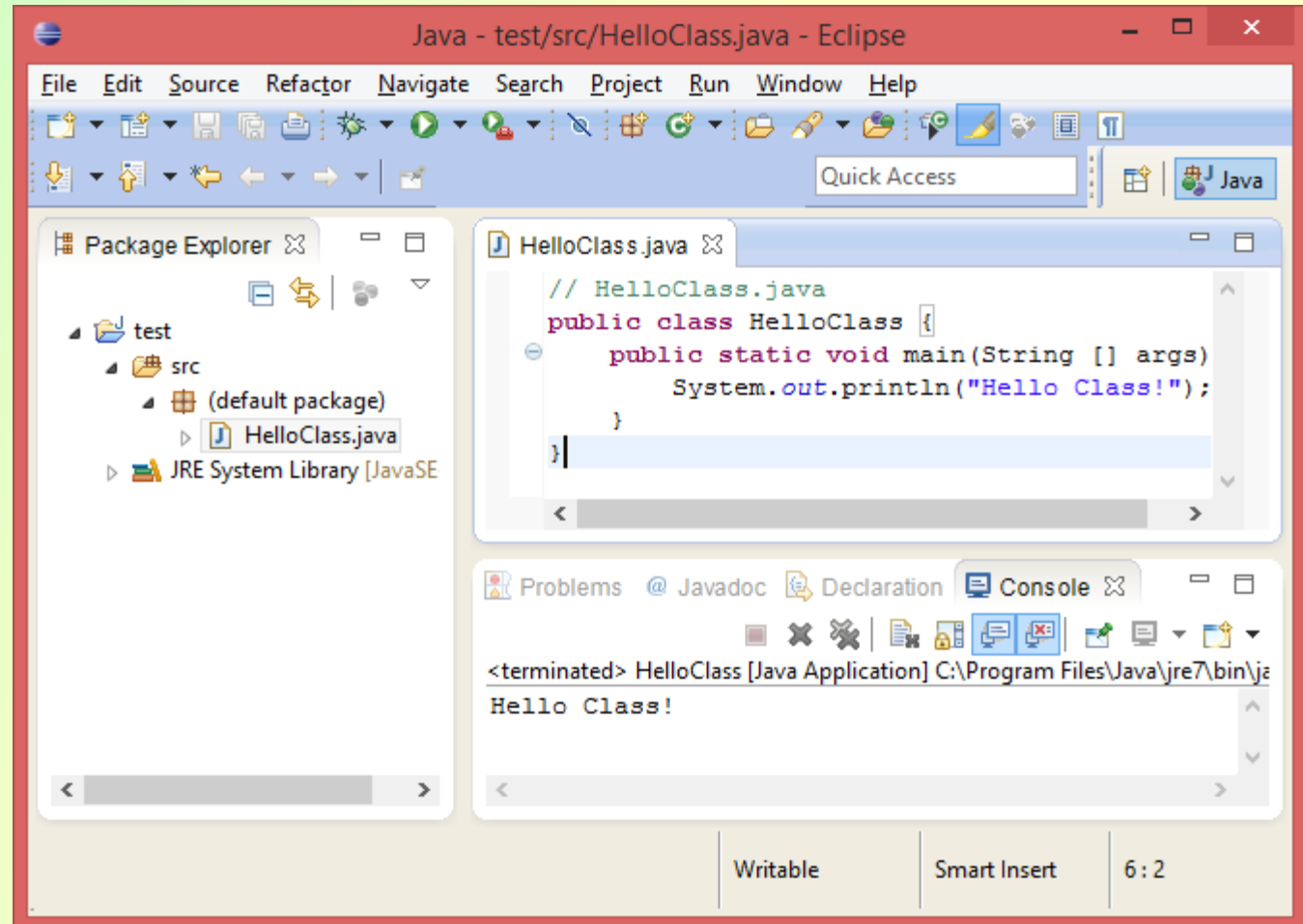


```
C:\WINDOWS\system32\cmd.exe

C:\Users\jeff\Desktop\jeff\usc\2014 spring-cs201\lectures>javac HelloClass.java
C:\Users\jeff\Desktop\jeff\usc\2014 spring-cs201\lectures>java HelloClass
Hello Class!
C:\Users\jeff\Desktop\jeff\usc\2014 spring-cs201\lectures>
```

IDE

- There are many Integrated Development Environments to use
 - › Eclipse
 - › NetBeans
 - › IntelliJ
 - › Visual J++
 - › Others?



Outline

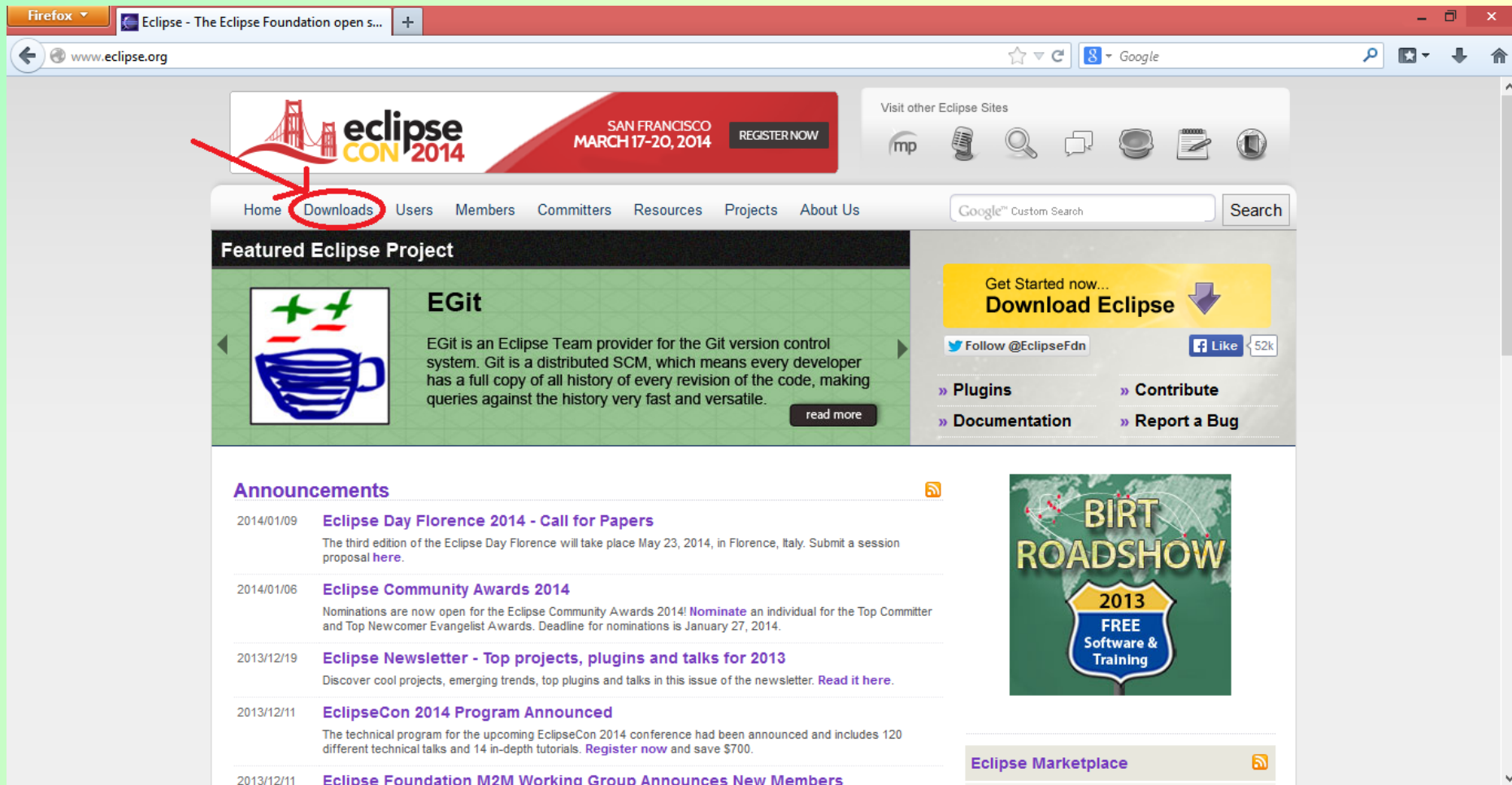
- Java Environment
- Eclipse Tutorial

- Go to <http://www.eclipse.org>



Downloading Eclipse

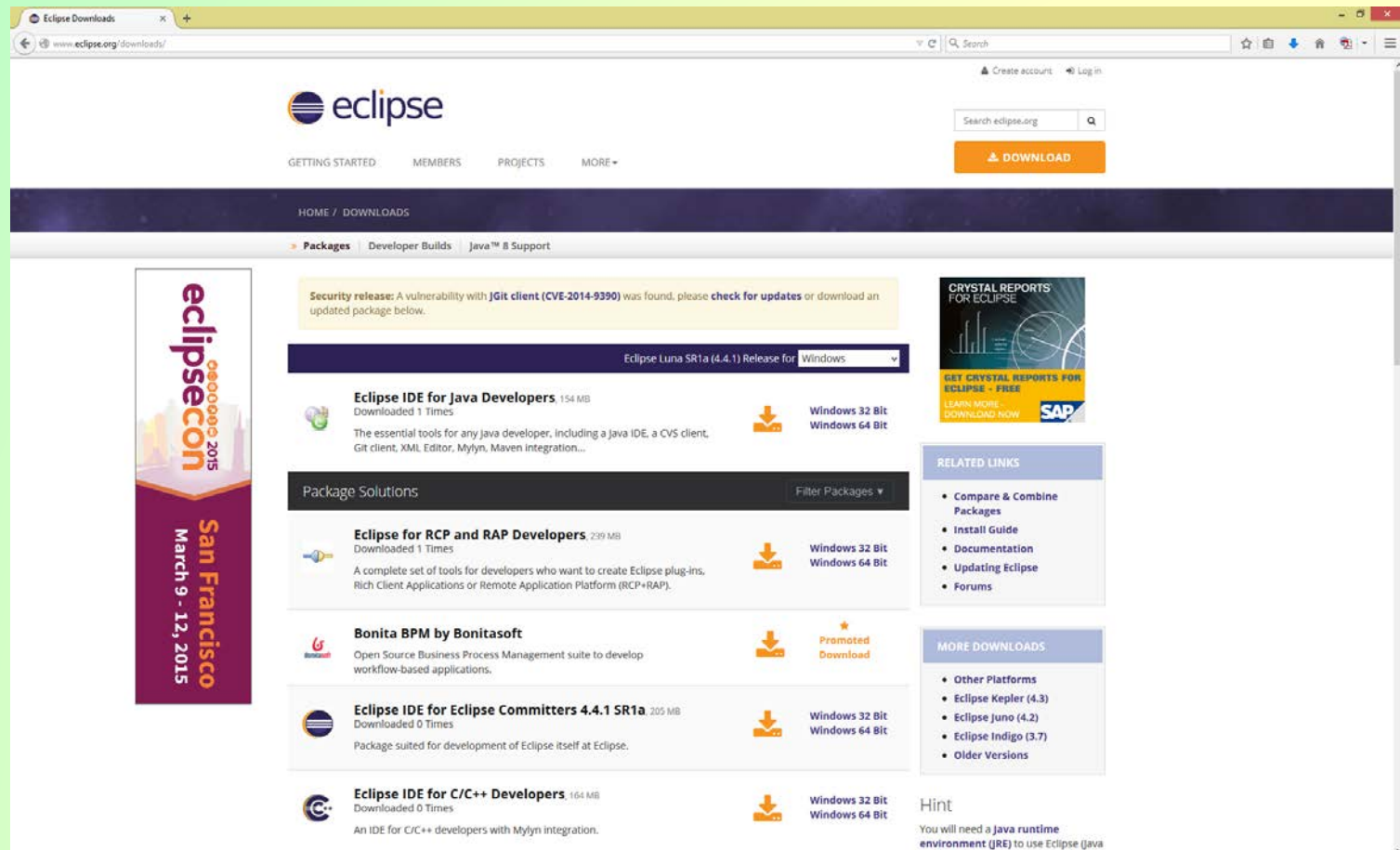
- Click **Downloads**



The screenshot shows the Eclipse Foundation website in a Firefox browser. The address bar displays 'www.eclipse.org'. The navigation menu includes 'Home', 'Downloads', 'Users', 'Members', 'Committers', 'Resources', 'Projects', and 'About Us'. The 'Downloads' link is circled in red, with a red arrow pointing to it from the 'Eclipse CON 2014' banner above. The banner also features the text 'SAN FRANCISCO MARCH 17-20, 2014' and a 'REGISTER NOW' button. Below the navigation menu, the 'Featured Eclipse Project' section highlights 'EGit', described as an Eclipse Team provider for the Git version control system. To the right, a yellow box encourages users to 'Get Started now... Download Eclipse'. Below this, there are links to 'Follow @EclipseFdn', 'Like' (52k), 'Plugins', 'Contribute', 'Documentation', and 'Report a Bug'. The 'Announcements' section on the left lists several events and updates, including 'Eclipse Day Florence 2014 - Call for Papers', 'Eclipse Community Awards 2014', 'Eclipse Newsletter - Top projects, plugins and talks for 2013', 'EclipseCon 2014 Program Announced', and 'Eclipse Foundation M2M Working Group Announces New Members'. On the right side, there is a 'BIRT ROADSHOW 2013' graphic and an 'Eclipse Marketplace' link at the bottom.

Downloading Eclipse

- Select your OS (if not already selected) then click the version for the Eclipse IDE for Java Developers



The screenshot shows the Eclipse Downloads page in a web browser. The page has a header with the Eclipse logo, navigation links (GETTING STARTED, MEMBERS, PROJECTS, MORE+), and a search bar. Below the header, there's a breadcrumb trail: HOME / DOWNLOADS. The main content area features a security release notice at the top, followed by a dropdown menu for "Eclipse Luna SR1a (4.4.1) Release for Windows". Below this, there are several download options for different Eclipse IDEs, each with a description, download count, and a download button. The options include:

- Eclipse IDE for Java Developers** (154 MB, Downloaded 1 Times): The essential tools for any java developer, including a java IDE, a CVS client, Git client, XML Editor, Mylyn, Maven integration...
- Eclipse for RCP and RAP Developers** (239 MB, Downloaded 1 Times): A complete set of tools for developers who want to create Eclipse plug-ins, Rich Client Applications or Remote Application Platform (RCP+RAP).
- Bonita BPM by Bonitasoft** (Open Source Business Process Management suite to develop workflow-based applications).
- Eclipse IDE for Eclipse Committers 4.4.1 SR1a** (205 MB, Downloaded 0 Times): Package suited for development of Eclipse itself at Eclipse.
- Eclipse IDE for C/C++ Developers** (164 MB, Downloaded 0 Times): An IDE for C/C++ developers with Mylyn integration.

Each option has a download button and a link to the download page. On the right side, there are sections for "RELATED LINKS" (Compare & Combine Packages, Install Guide, Documentation, Updating Eclipse, Forums) and "MORE DOWNLOADS" (Other Platforms, Eclipse Kepler (4.3), Eclipse Juno (4.2), Eclipse Indigo (3.7), Older Versions). A "Hint" section at the bottom right states: "You will need a Java runtime environment (JRE) to use Eclipse (Java...".

Downloading Eclipse

- Click the green arrow next to the selected mirror

The screenshot shows the Eclipse Foundation website's download page. The browser's address bar displays the URL: `www.eclipse.org/downloads/download.php?file=/technology/epp/downloads/release/kepler/SR1/eclipse-standard-kepler-SR1-win32-x86_64.zip`. The page features a navigation bar with links to Home, Downloads, Users, Members, Committers, Resources, Projects, and About Us. A sidebar on the left includes links to Source code and More Packages, a 'Give Back to Eclipse' section with donation buttons for \$5, \$15, and \$25, and a PayPal logo. The main content area is titled 'Eclipse downloads - mirror selection' and contains the text: 'All downloads are provided under the terms and conditions of the Eclipse Foundation Software User Agreement unless otherwise specified.' Below this, it says 'Download eclipse-standard-kepler-SR1-win32-x86_64.zip from:' followed by a list of mirrors. The first mirror, '(United States) The Pennsylvania State University (http://...)', is highlighted with a red circle and a green download arrow icon. A red arrow points from the text 'Click the green arrow next to the selected mirror' to this icon. To the right of the mirror list, there is a 'Squish' advertisement and a section titled 'Other options for this file' which lists 'HTTP mirrors only (xml)', 'FTP mirrors only (xml)', 'All mirrors (xml)', and 'Direct link to file (download starts immediately from best mirror)'. At the bottom, there is a 'Related Links' section.

Firefox | Eclipse downloads - mirror selection | +

www.eclipse.org/downloads/download.php?file=/technology/epp/downloads/release/kepler/SR1/eclipse-standard-kepler-SR1-win32-x86_64.zip

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Eclipse downloads - mirror selection

All downloads are provided under the terms and conditions of the [Eclipse Foundation Software User Agreement](#) unless otherwise specified.

Download eclipse-standard-kepler-SR1-win32-x86_64.zip from:

(United States) The Pennsylvania State University ([http://...](#))

Checksums: [\[MD5\]](#) [\[SHA1\]](#)

...or pick a mirror site below.

Get It Faster Here

SpringSource
Rapid downloads of Eclipse packages. Free downloads of SpringSource Tool Suite for Spring, AspectJ, Groovy and Grails.

Yatta Solutions GmbH
Get your Eclipse download and have a look at our modeling solutions made in Germany.

EclipseSource
Warp speed from the Amazon cloud plus a choice of hundreds of plug-ins with managed dependencies.

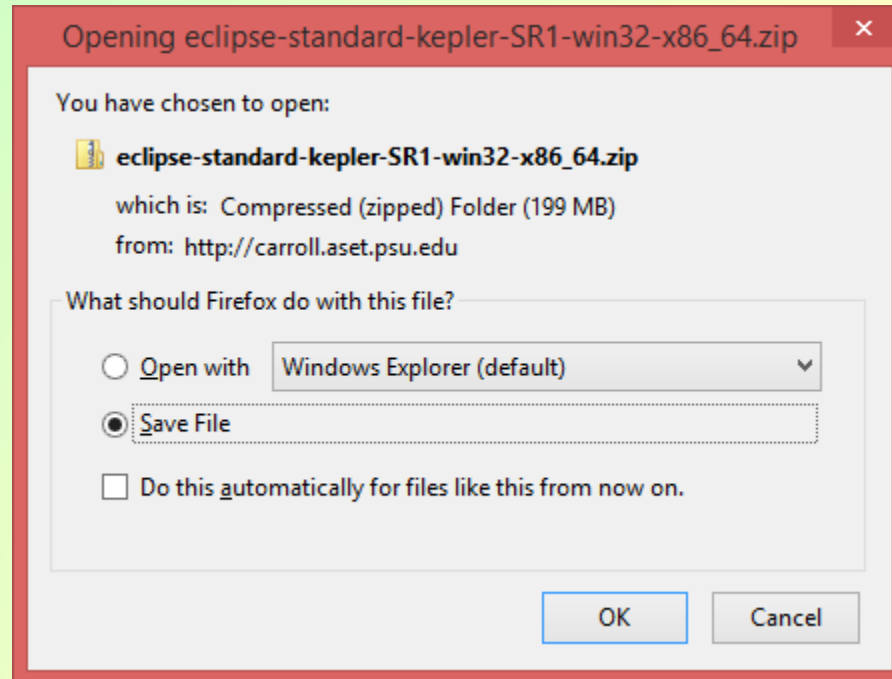
Other options for this file

- [HTTP mirrors only \(xml\)](#)
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- [All mirrors \(xml\)](#)
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Related Links

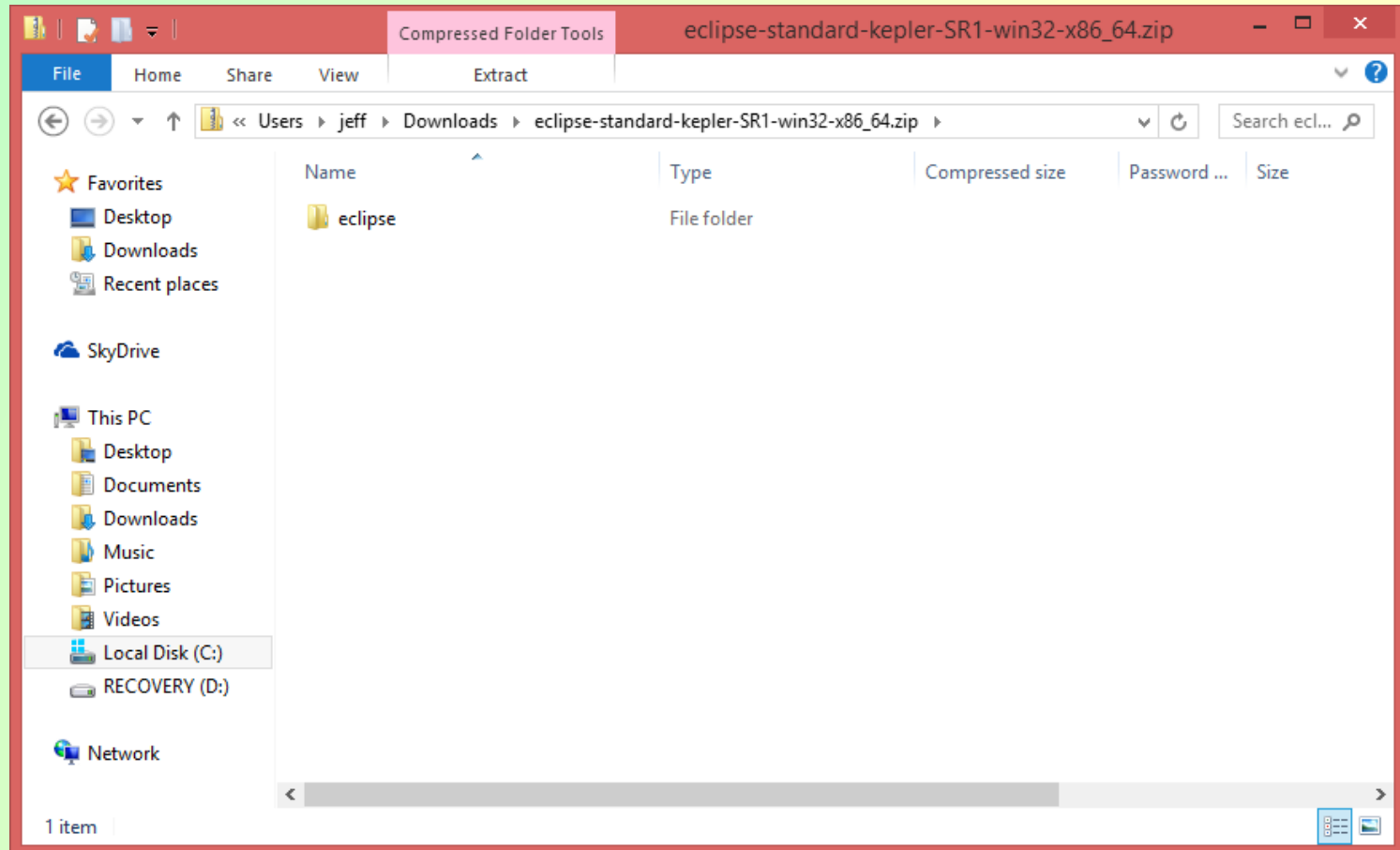
Downloading Eclipse

- Save the zip file



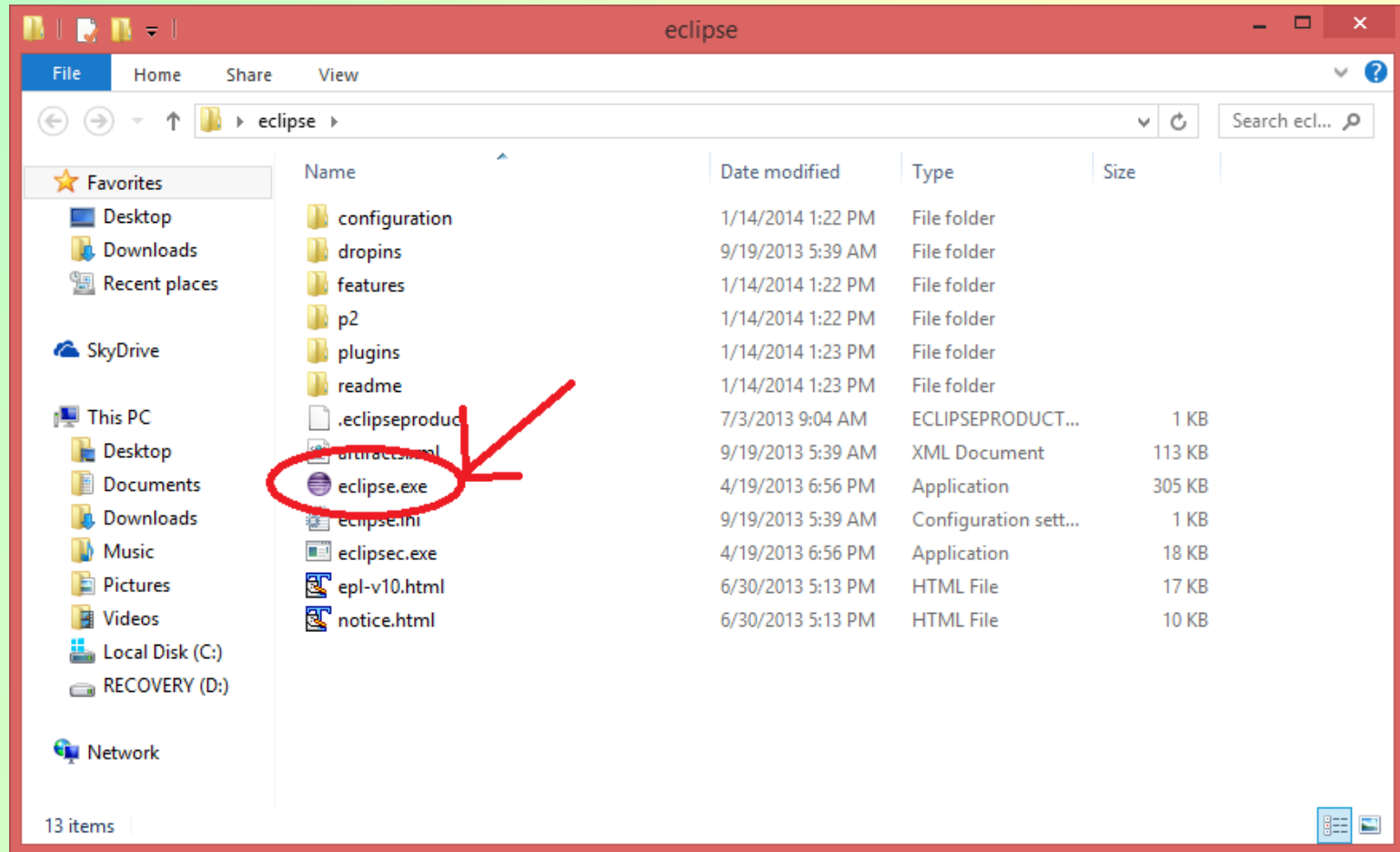
Downloading Eclipse

- Open the zip file and drag the “eclipse” directory to your Desktop (or another directory of your choosing)



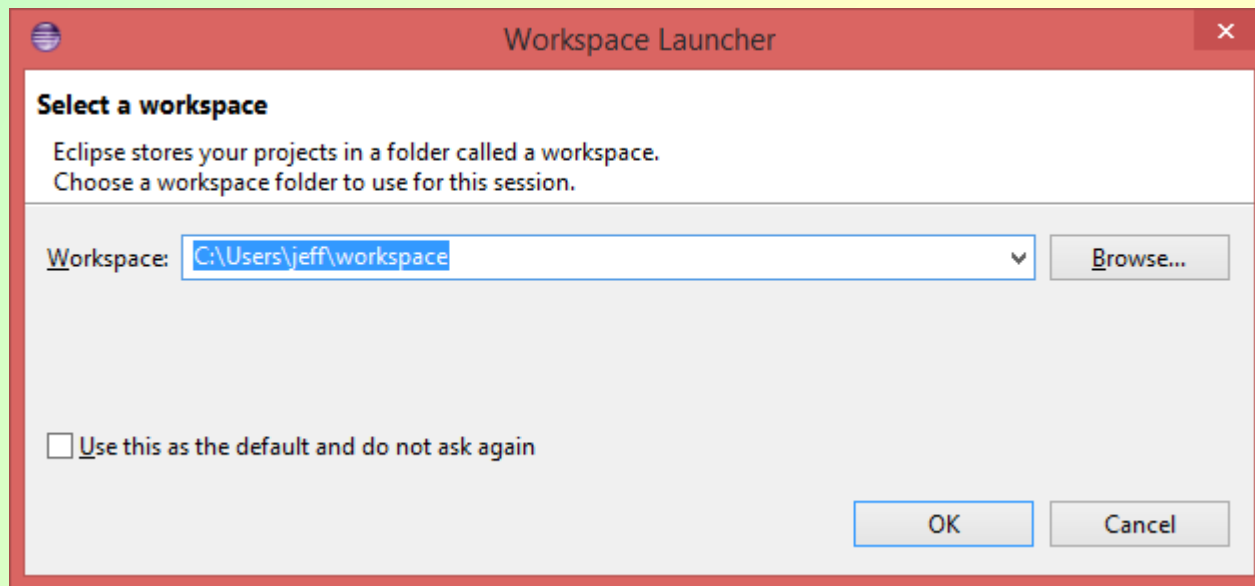
Running Eclipse

- After the zip file finishes extracting, open the “eclipse” directory and run the eclipse executable



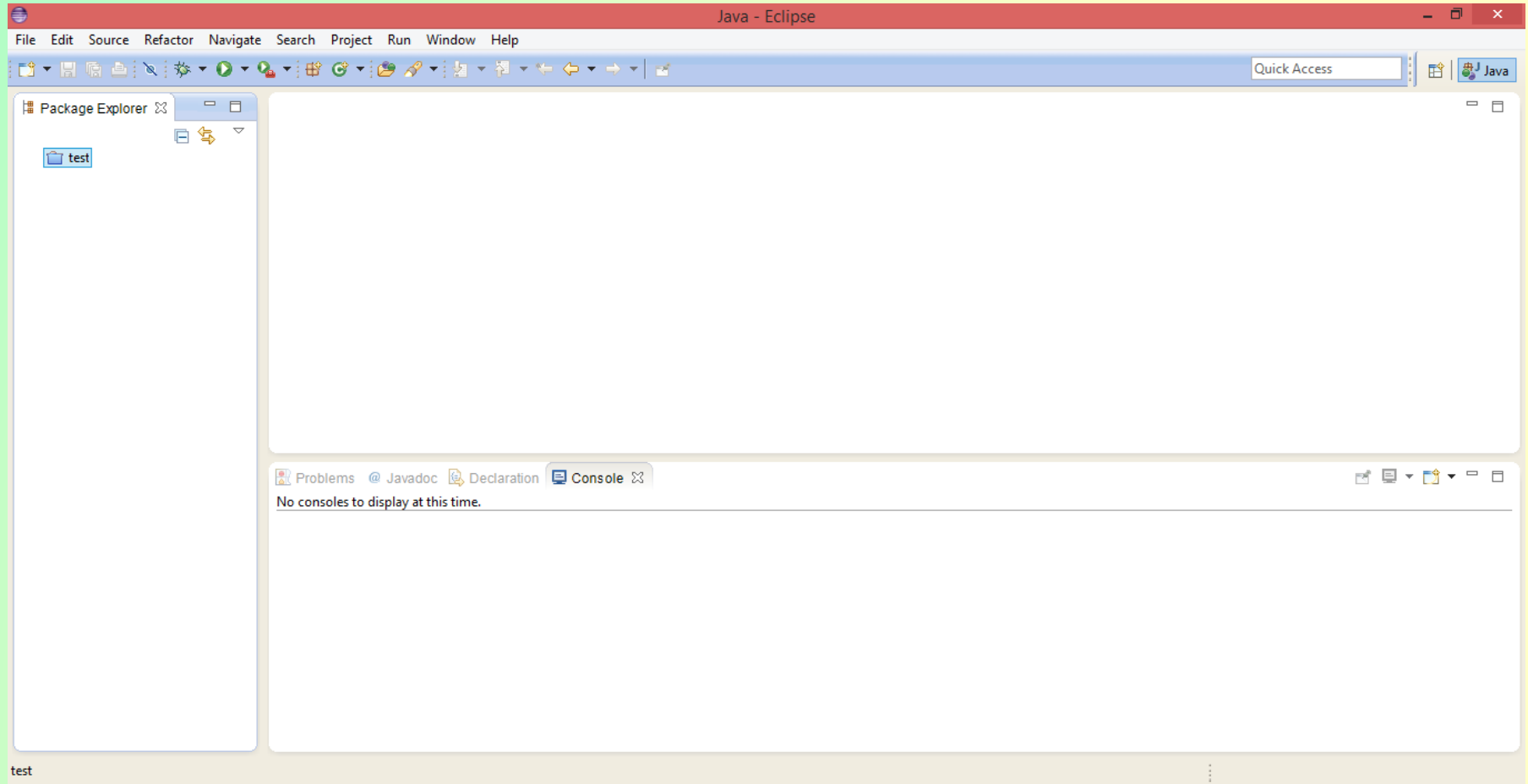
Running Eclipse

- Select a workspace directory
 - › The workspace directory will be the one that contains all of your projects, code, and compiled files



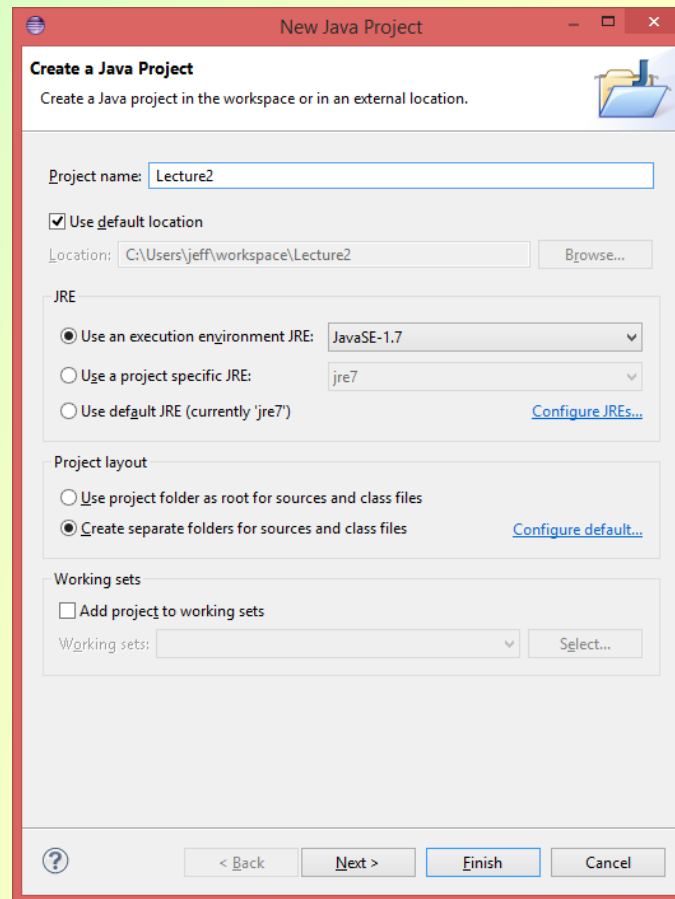
Creating a Project

- Go to File->New->Java Project



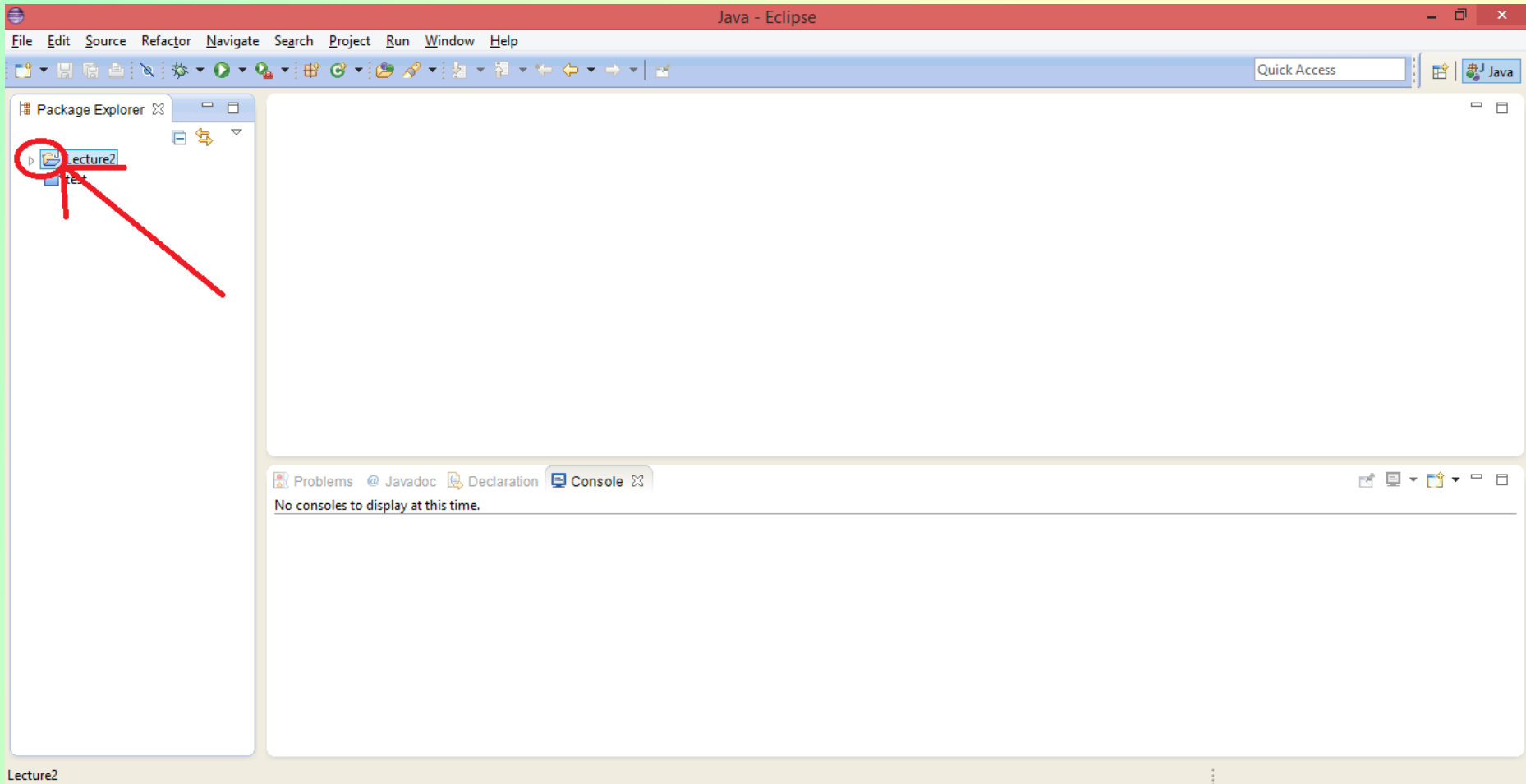
Create a Project

- Type a name for the Project and click Finish
 - › This has nothing to do with the code, but it should be descriptive enough for you to know what code is in the project



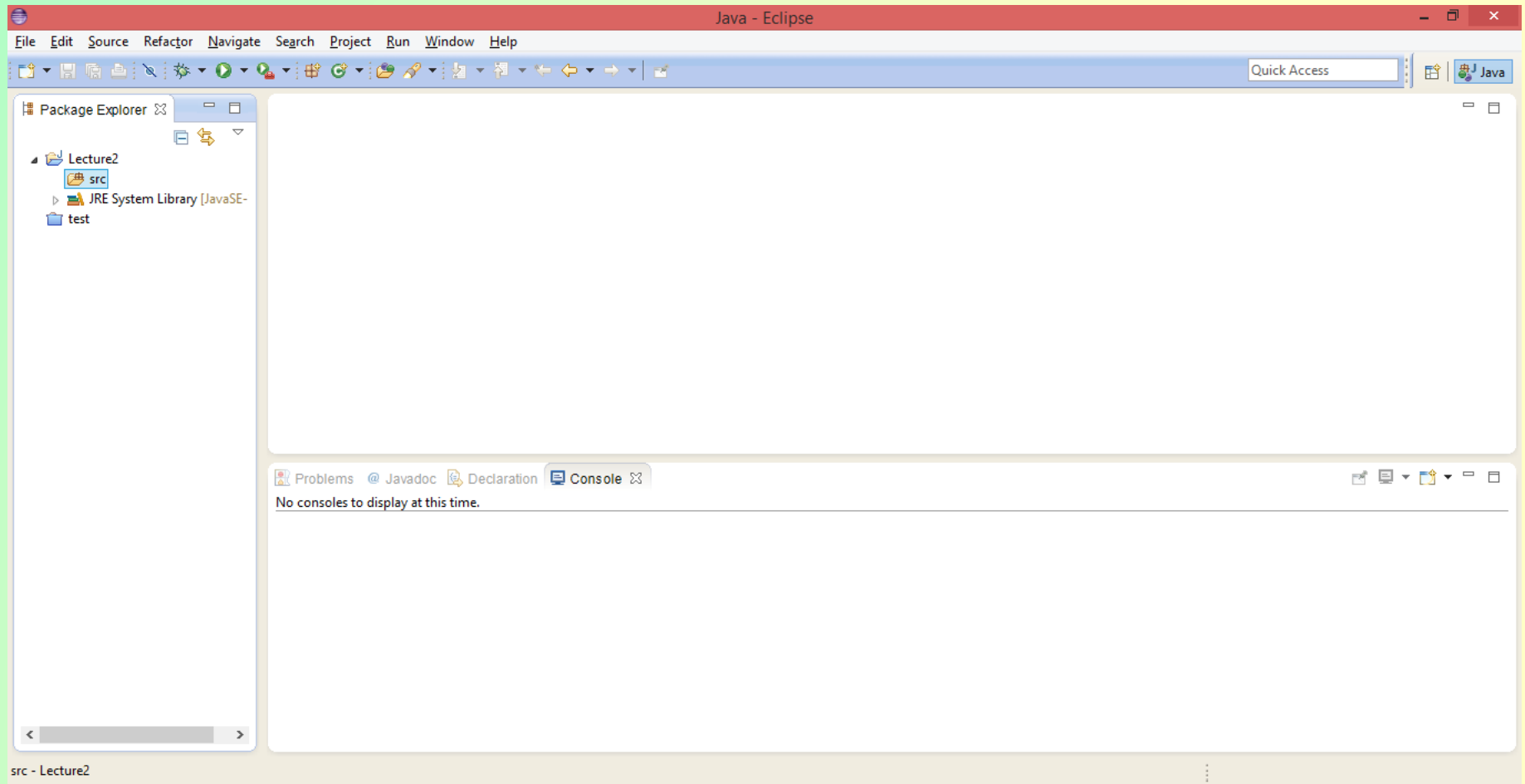
Create a Class

- Expand the Project by clicking the arrow next to the name of the project you just created



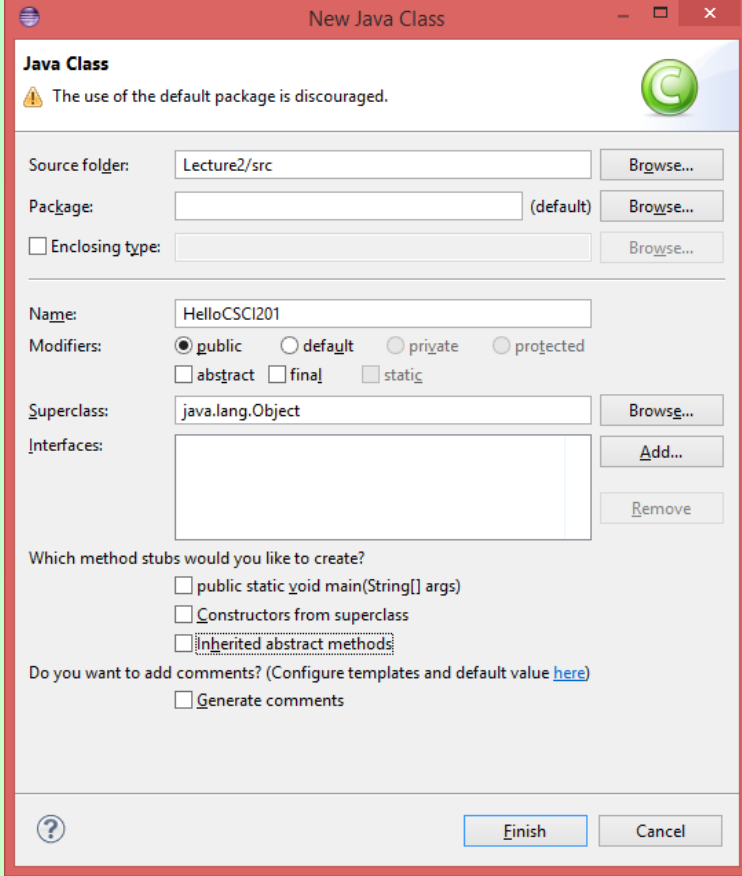
Create a Class

- Right-click on “src” and go to New->Class



Create a Class

- Type a name for the class and uncheck all other boxes (unless you want Eclipse to generate code for you, which is always dangerous), then click Finish



The screenshot shows the 'New Java Class' dialog box in Eclipse. The title bar is 'New Java Class'. The main title is 'Java Class'. A warning icon and text state: 'The use of the default package is discouraged.' The 'Source folder' is 'Lecture2/src'. The 'Package' is '(default)'. The 'Enclosing type' is unchecked. The 'Name' is 'HelloCSCI201'. The 'Modifiers' are 'public' (selected), 'default', 'private', 'protected', 'abstract', 'final', and 'static'. The 'Superclass' is 'java.lang.Object'. The 'Interfaces' list is empty. The 'Which method stubs would you like to create?' section has three unchecked options: 'public static void main(String[] args)', 'Constructors from superclass', and 'Inherited abstract methods'. The 'Do you want to add comments?' section has one unchecked option: 'Generate comments'. The 'Finish' button is highlighted.

Java Class

The use of the default package is discouraged.

Source folder: Lecture2/src Browse...

Package: (default) Browse...

☐ Enclosing type: Browse...

Name: HelloCSCI201

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

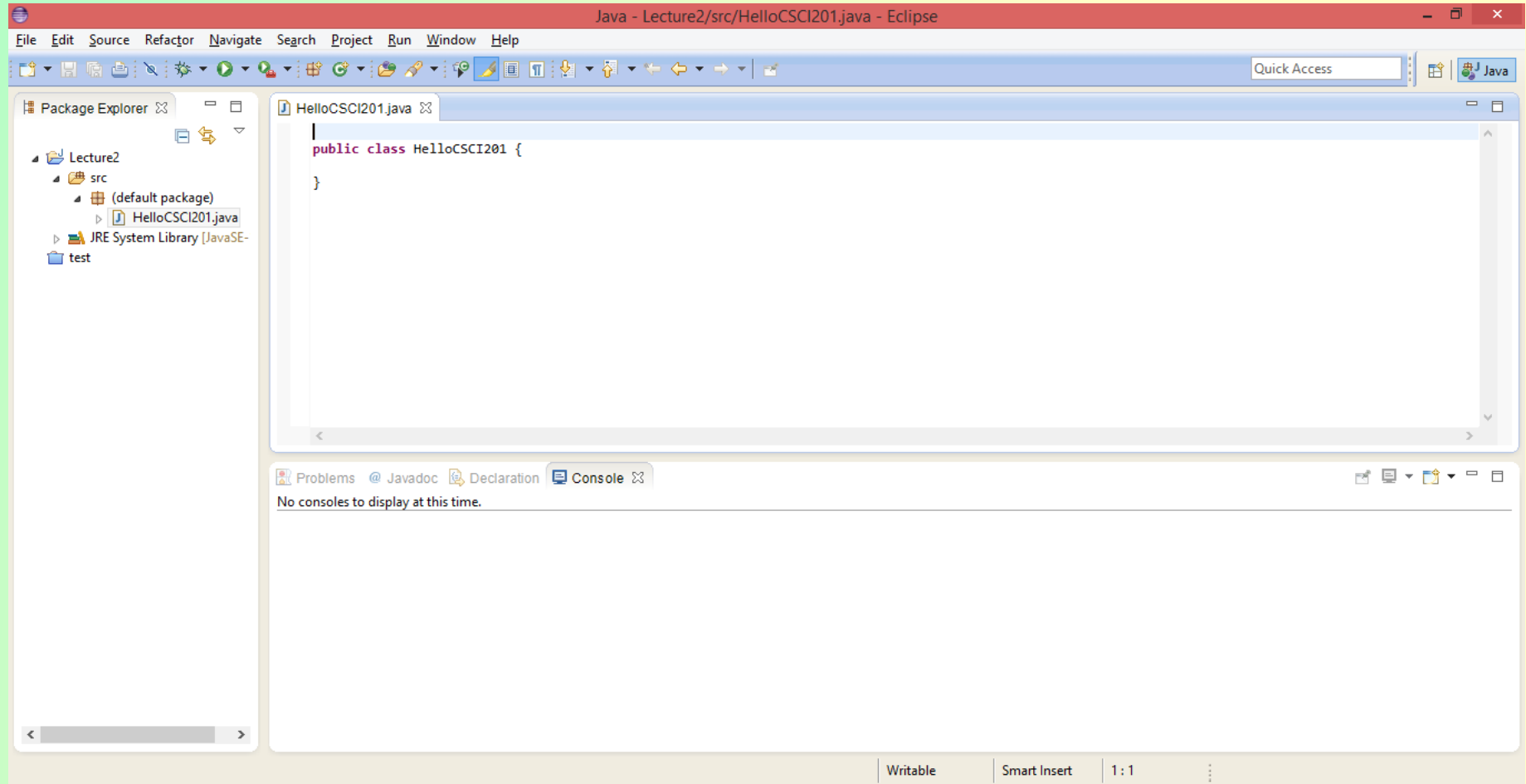
Do you want to add comments? (Configure templates and default value [here](#))

☐ Generate comments

Finish Cancel

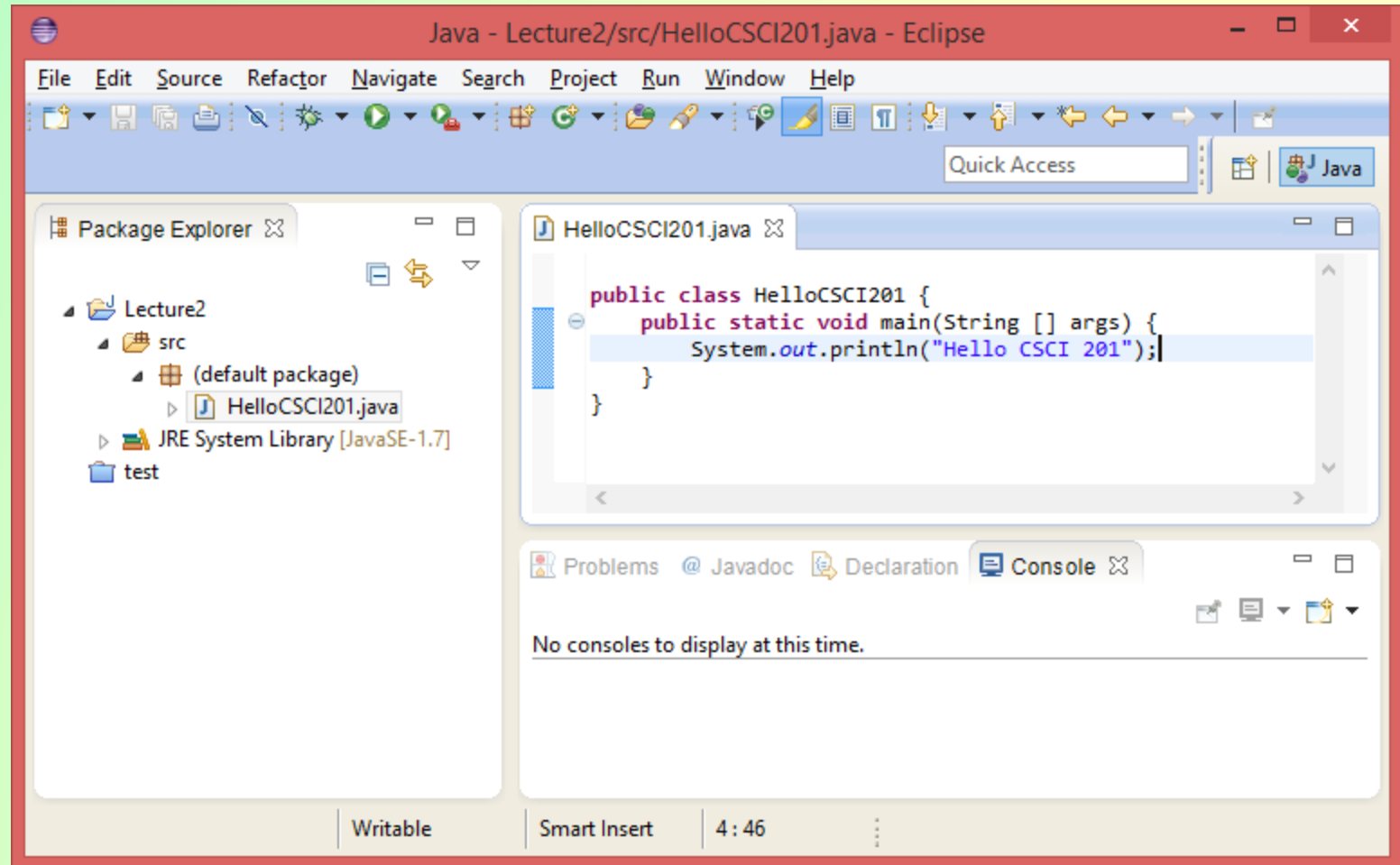
Write Some Code

- You should now have a nearly-blank file and can begin writing code



Write Some Code

- Type the following code into the HelloCSCI201.java file



Running the Code

- Click the green play button at the top to run your code
 - › If your code doesn't compile, you will have error messages at the bottom of the screen
 - › If your code compiles, your output will be at the bottom of the screen

