Welcome to CSSE 220

- We are excited that you are here:
  - Start your computer
  - Do NOT start Eclipse
  - Follow the instructions in the email, if you haven't already
  - Pick up a quiz from the back table
    - Answer the first two questions

Course Introduction, Starting with Java

CSSE 220—Object-Oriented Software Development

Rose-Hulman Institute of Technology

Agenda

- Instructor intro
- A few administrative details
- Verify Eclipse and Subclipse configuration
- Java *vs*. Python
- Examine and modify simple Java programs

Daily Quizzes

- I expect you to answer every question.
  - Including the last two, at least put N/A
- Stop me if I don't cover a question!

Q1 - 2

A Tour of the On-line Course Materials

- Moodle
- Piazza
- Syllabus
- Schedule

Programming is not a spectator sport

- And neither is this course
- Ask, evaluate, respond, comment!
- Interrupt me! Even with statements like, *“I have no idea what you were just talking about.”*
- I do not intend for classroom discussions to go over your head. Don't let them!

Ok, let’s write our first Java program!

- Hello world

Check the Repository Folder

- Click Start → Computer
- Double-Click “Local Disk (C:)”
- Double-Click “EclipseWorkspaces”
  - If it doesn’t exist, create it
- Verify that you have a folder named “csse220”
  - If it doesn’t exist, create it
- If you have taken the course before:
  - Rename the existing folder to “csse220-old”
  - Create a new folder named “csse220”

Opening Eclipse

- Start Eclipse
  - Go to C:\Program Files\eclipse
  - Double-click “eclipse.exe”
- When prompted for the workspace, enter:
  - C:\EclipseWorkspaces\csse220
- If not prompted for the workspace, after Eclipse loads:
  - Click File → Switch Workspaces → Other
  - Enter path above

Select Perspective

- Look at the top-right corner of Eclipse
- If “Java” is selected, do nothing and wait for next slide
- Otherwise:
  - Click Window → Perspective → Other…
  - Select “Java”
  - Click OK

Set Compiler Version

- Open Eclipse
- Select Window -> Preferences
- Expand Java in the left menu
- Click Compiler
- Select compiler compliance level of 1.7 and check "Use default compliance settings" if it isn't already selected.
- Click OK

Get SVN Menu

- If SVN menu not shown at the top of the screen:
  - Click Window → Perspective → Customize Perspective
  - Click “Command Groups Availability” OR “Action Set Availability”
  - Scroll down and check “SVN”
  - Click “OK”

SVN Repositories Window

- You can also display the SVN Repositories Window by doing the following:
  - Click Window → Show View → Other…
  - Expand SVN
  - Select “SVN Repositories”
  - Click OK

Add Your Repository

- Click SVN → "Checkout projects from SVN"
  - Select "Create a new repository location"
- Click Next
- Type the following URL, replace the user in blue with your username:

  http://svn.csse.rose-hulman.edu/repos/csse220-201620-user

  Mine would be:

  http://svn.csse.rose-hulman.edu/repos/csse220-201620-stouder
- Click Next

Checkout Project for Today

- If you received an error at the end of the last slide, let myself or a TA know immediately
- Otherwise, expand your repository and select “HW1”
- Click Finish

Show Package Explorer

- If HW1 did not show up in the Package Explorer (defaults to the left):
  - Click Window → Show View → Package Explorer

HelloPrinter.java

- To run a Java program:
  - Right-click the .java file in Package Explorer view
  - Choose **Run As → Java Application**
- Change the program to say hello to a person next to you
- Introduce an error in the program
  - See if you can come up with a different error than the person next to you
- Fix the error that the person next to you introduced

A First Java Program

In Java, all variable and function definitions are inside *class* definitions

main is where we start

```
public class HelloPrinter {

    public static void main(String[] args) {
        System.out.println("Hello, World!");
    }

}
```

System.out is Java's standard output stream. This is the variable called **out** in the **System** class.

System.out is an *object* from the **PrintStream** class. **PrintStream** has a *method* called **println( ).**

Q8

Introduction to Java

Things Java Has in Common with Python

- Classes and objects
- Lists (but no special language syntax for them like Python)
- Standard ways of doing graphics and GUIs
- A huge library of classes/functions that make many tasks easier
- Nice integration with the Eclipse IDE

Why Java?

- Widely used in industry for large projects
  - From cell phones
    - including smart phones—Android platform
  - To global medical records
- Highlights essential topic of the class – Object Orientation
- Similar to other popular languages C#, Objective-C
- Less complex than C++
- Most popular language according to the TIOBE Programming Community Index [November 2015]

http://www.tiobe.com/index.php/content/paperinfo/tpci/index.html

Guess what language is #2

Q9

Interlude: JavaScript and Java

Java is to Javascript as Ham is to Hamster

From Wikipedia (edited, bullets added to enhance PowerPoint readability):

- The change of name to JavaScript roughly coincided with Netscape adding support for Java technology in its web browser.
- The name caused confusion, giving the impression that JavaScript was a spin-off of Java.
- The choice has been characterized by many as a marketing ploy by Netscape to give JavaScript the cachet of what was then the hot new web-programming language.
- It has also been claimed that the language's name is the result of a co-marketing deal between Netscape and Sun, in exchange for Netscape bundling Sun's Java runtime with its then-dominant browser.

Basic Java Functions and Conditionals

- Let’s go through the ConditionalExamples.java file

```
/**
 * Has a static method for computing n!
 * (n factorial) and a main method that
 * computes n! for n up to Factorial.MAX.
 *
 * @author Mike Hewner & Delvin Defoe
 */
public class Factorial {
    /**
     * Biggest factorial to compute.
     */
    public static final int MAX = 17;

    /**
     * Computes n! for the given n.
     *
     * @param n
     * @return n! for the given n.
     */
    public static int factorial (int n) {
        ...
    }

    ...

}
```

Javadoc comments

We left out something important on the previous slide – comments!

Java provides Javadoc comments (they begin with /**) for both:

- Internal documentation for when someone reads the code itself
- External documentation for when someone re-uses the code

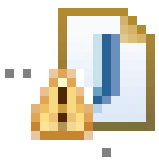
Comment your own code now, as indicated by this example. Don't forget the @author tag in HelloPrinter.

Writing Javadocs

- Written in special comments: /** … */
- Can come before:
  - Class declarations
  - Field declarations
  - Constructor declarations
  - Method declarations
- Eclipse is your friend!
  - It will generate Javadoc comments automatically
  - It will notice when you start typing a Javadoc comment

In all your code:

- Write appropriate comments:
  - Javadoc comments for public fields and methods.
  - Explanations of anything else that is not obvious.
- Give self-documenting variable and method names:
  - Use name completion in Eclipse, Ctrl-Space, to keep typing cost low and readability high
- Use Ctrl-Shift-F in Eclipse to format your code.
- Take care of all auto-generated TODO's.
  - **Then delete the TODO comment**.
- Correct ALL compiler warnings. Quick Fix is your friend!



HW1 DUE
BEFORE NEXT SESSION

IT'S ON THE SCHEDULE PAGE.

(IT IS YOUR RESPONSIBILITY TO KEEP UP WITH THE SCHEDULE PAGE)

AS ALWAYS, POST ON PIAZZA (OR EMAIL ME) IF YOU HAVE ANY QUESTIONS