

# Lecture 02:

## Getting Started, Part I

Sierra College  
CSCI-12  
Spring 2015  
Weds 01/28/15

# Announcements

- **General**

- Office hours formalized:
  - Mondays 8:30am-9:30am and 12:30pm-1:30pm, in V-105 or in lab
  - Syllabus posted on Canvas has been updated (update your own hardcopy)
- Any questions about the syllabus, or about how the course will be run??
- Any problems with:
  - Enrolling via MySierra?
  - Installing Java/jGRASP?
  - Obtaining textbook?

- **New assignments**

- LAB02: Hello World (posted today, due Tues 2/3)
  - A simple, getting started program in Java (most will finish today)
  - Demo'd in class, you will implement in lab (step-by-step handout)
- HW02: Canvas Intro (posted today, due Tues 2/3)
  - Simple, get-your-feet-wet in Canvas assignment
  - Make sure you do ALL 3 PARTS:
    - Discussion board post (personal intro to the class)
    - Canvas messaging (answer a few syllabus questions)
    - VARK inventory (post a text file to me)

# Lecture Topics

- **Last time:**
  - Course intro/overview
  - Syllabus
- **Today:**
  - Finish up Canvas and advice (from last lecture)
  - Introduction to Java and jGRASP
  - “Hello World” program demo

# Elements of Programming

- Many skilled, real-world fields of endeavour require at least two things:
  - Raw materials
  - Tools with which to manipulate those materials
- Examples:
  - Baking
    - Flour, sugar, baking powder, yeast, ...
    - Oven, mixer, baking sheets, bowls, ...
  - Carpentry
    - Lumber, nails, wood screws, bolts, ...
    - Table saw, hammer, drill, level, sander, ...
- For any software development, we usually need the following two elements:
  - The **software language** itself
  - Some **development environment**, in which to write, compile, execute, and test software
- Fortunately for us in this Java course, both of the above are FREE downloads with easy installations!

# Java Versions

- The current development versions of Java are:
  - **Java SE 7u75** (as of 1/23/15)
    - **Java 7 is sufficient for the purposes of this course**
  - Java SE 8u31 (as of 1/23/15)
  - If you are interested, there is a web link to a history of Java releases in this lecture module:
    - [http://en.wikipedia.org/wiki/Java\\_version\\_history](http://en.wikipedia.org/wiki/Java_version_history)
- Java is a free download from Oracle
  - <http://www.oracle.com/technetwork/java/javase/downloads/index.html>
  - URL is also given in the syllabus
- When downloading Java, be aware that there are two variants:
  - Java JDK
  - Java JRE

# Java Variants

- **JRE (Java Runtime Environment)**
  - Contains everything required to run Java applications on your system/browser
  - Often called the “Java runtime”
  - Modern systems or browsers are typically already “Java-enabled” with this
- **JDK (Java Development Kit)**
  - The bundle of software required if you want to develop Java applications
  - Language, class libraries, compiler, etc.
  - THIS is what we need to do work in CS-12
- From the Oracle download site:

## Which Java package do I need?

- **Software Developers: JDK (Java SE Development Kit).** For Java Developers. Includes a complete JRE plus tools for developing, debugging, and monitoring Java applications.
- **Administrators running applications on a server: Server JRE (Server Java Runtime Environment)** For deploying Java applications on servers. Includes tools for JVM monitoring and tools commonly required for server applications, but does not include browser integration (the Java plug-in), auto-update, nor an installer. [Learn more](#) ➤
- **End user running Java on a desktop: JRE: (Java Runtime Environment).** Covers most end-users needs. Contains everything required to run Java applications on your system.



# Java JDK vs. JRE

- The JDK is a SUPERSET of the JRE
  - Contains the JRE, plus much more



- The **Java 7 JDK** is installed in the V-103 lab

- From the Oracle download site:

Java SE 7u75/76

[Auto-update Notice & End of Public Updates for Oracle JDK 7](#)

Coincident with the January 2015 CPU release users with the auto-update feature enabled will be migrated from Oracle JRE 7 to Oracle JRE 8. Also, please note the April 2015 CPU release will be the last Oracle JDK 7 publicly available update. For more information, and details on how to receive longer term support for Oracle JDK 7, please see the [Oracle Java SE Support Roadmap](#).

These releases includes important security fixes. Oracle strongly recommends that all Java SE 7 users upgrade to one of these releases.  
[Learn more](#) ➤

- [Installation Instructions](#)
- [Release Notes](#)
- [Oracle License](#)
- [Java SE Products](#)
- [Third Party Licenses](#)
- [Certified System Configurations](#)
- [Readme Files](#)
  - [JDK Readme](#)
  - [JRE Readme](#)

**JDK**  
[DOWNLOAD](#) ⬇

**Server JRE**  
[DOWNLOAD](#) ⬇

**JRE**  
[DOWNLOAD](#) ⬇

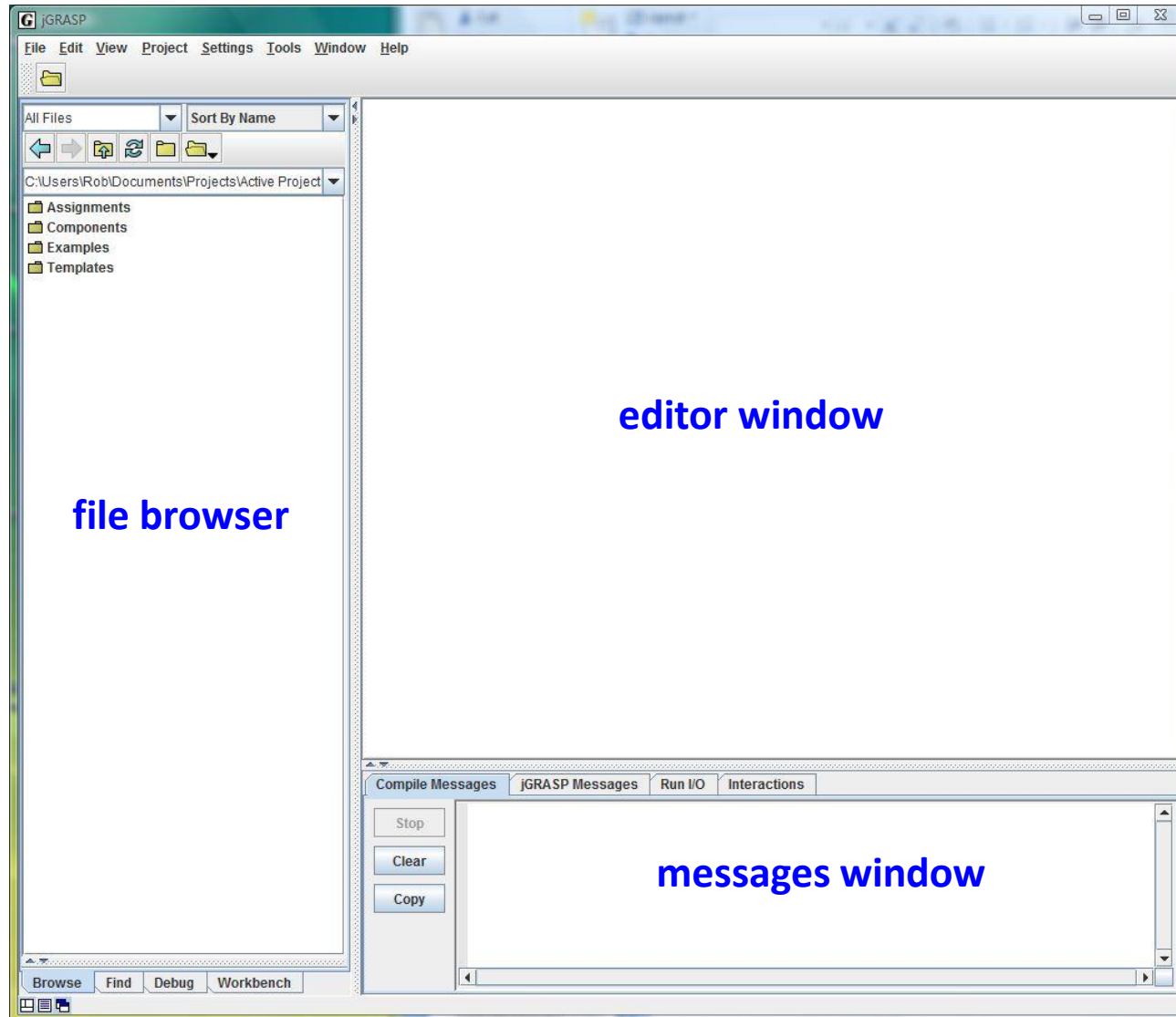
A blue arrow points from the 'JDK' download button towards the left, towards the list of links.

# What's An IDE?

- An **IDE (Integrated Development Environment)** is:
  - A cleanly integrated toolchain of software development tools
  - All tools live under one common application framework.
- There may be many capabilities in an IDE, but we will be most interested in these 3: **editing, compiling, debugging**
  - Editor: allows us to write and modify Java code
  - Compiler: an easy-to-use interface for compiling into Java bytecode (turning it into native 1's and 0's) for execution
  - Debugger: lets us step thru our program's execution path, to trace the logic and discover where any problems may be
    - It's like a code execution simulator
    - We can't run a debugger UNTIL our code has cleanly compiled first



# The jGRASP IDE



# Why jGRASP?

- Other alternatives exist (Eclipse, NetBeans, BlueJ, etc.), so why jGRASP??
- **It's free** (well, so are many others)
  - No-cost download from [www.jgrasp.org](http://www.jgrasp.org)
- **It's simple**
  - Easy to use, fully-featured... but not too much so
  - There can sometimes be a tendency to go “off into the weeds” with all the buttons and features of higher-powered tools
  - It keeps the focus on the language and not the tool
- **It doesn't do too much of the work for us**
  - Other tools will sometimes do too much work automatically for us (typing completion, context-aware editors)
  - We don't want this while we are LEARNING a language
  - Once you've learned the language, by all means use a more professional-grade tool!

# Software Installations

- Installation of Java and jGRASP is quick and easy
    - Both are very slam-dunk, reliable installs
- 1) Download both installers (Java 7 JDK and jGRASP)
    - See the URLs on prior slides
    - Select the OS/processor appropriate to your system
    - You should probably perform the installs with Admin privileges
  - 2) Run each installer
    - Install the Java JDK first
    - Then install jGRASP
      - jGRASP needs to know where Java is installed
    - The default settings for both installs should be fine

# Hello World

- Today's first lab assignment is the traditional "Hello World" program
  - Write a simple program to display some user-specified text
  - Full details in the assignment handout you will get
- A simple, trivial first program, but it does have some very useful features
  - Initial exposure to the language and IDE
  - Ability to display output to the screen
  - Confirms language, compiler, IDE are all working
  - Gives us a working starting point for following programs
- Two-pass implementation:
  - We will demonstrate it in class
  - You will implement it yourself during lab period (from a handout)

# For Next Time

- Lecture prep
  - Review Monday's lecture notes over weekend
  - Textbook prep reading (posted in schedule)
- Assignments
  - Complete Hello World if not finished in lab
  - Work on the Canvas HW assignment (3 parts)
- Enjoy the Super Bowl commercials
  - Hopefully the game this year, too ;-)