Laboratory 1

CS 1323, Spring 2015

# Objectives

1. Install the Java Runtime Environment (JRE). (20 points)
2. Install the eclipse Integrated Development Environment (IDE). (20 points)
3. Compile a simple Java program. (20 points)
4. Execute a simple Java program. (20 points)
5. Locate the standard Java documentation (Java API) online and locate the String class. (20 points)

Section 10: Before you leave the laboratory, you must upload your program to the dropbox in Janux and have your computer installation checked by a TA to get credit.

Section 1: Upload the simple Java program to the dropbox in Janux. We will assume that you've done learning objective #5 successfully.

This program is due by January 21 at 11:59 p.m.

# Description

In order to run Java programs, we need three things: software that allows us to enter programs into the computer (Integrated Development Environment called an IDE), software that allows the computer to translate the program into bytecode (this is the compiler inside of eclipse), and software that reads bytecode and performs computer operations (Java Runtime Environment call the JRE). We also need access to the documentation of the libraries that we’ll use in this course.

I’ve included some help on organizing the information in this class. You don’t need to organize the same way I do, but I do encourage you to organize this information in some reasonable fashion. We will have hundreds of files in this class. If you put them all on your desktop it will be a mess.

## Start a Folder for this class

Create a folder for this class. I name my folder CS 1323 Spring 2015. I use dropbox.com to backup my files automatically and allow all of my computers to access them. If you want to use this free service, create this directory in your dropbox folder. Dropbox keeps your files both locally and on a server (this is “the cloud”), so if you’re not on the internet you still have access to your files. The next time you login, they will be uploaded. Dropbox also allows you to revert to older versions of your files, which can be very helpful if you accidentally delete a file. Although I use dropbox, there are many other cloud services that can be used.

I recommend making the following folders to keep the class organized. Indentation in the list below is used to indicate folders within folders.

CS 1323 Spring 2015

Homework

Homework 1… Homework 6 (this is also 6 separate folders)

Laboratories

Week 1… Week 15 (this is 15 separate folders)

Your eclipse software can also be stored in the CS 1323 Spring 2015 folder. You don’t need to make the folder for eclipse in advance.

# Install Software

It is best to perform this installation exactly in the order specified, particularly if you’re not very comfortable installing software**. If you install eclipse before Java’s JRE, it won’t work.** There are videos and PowerPoint presentations on Janux that show this installation if you need to reinstall your system during the semester. The PowerPoints show old versions of Java/eclipse, so use the newest versions listed in this document.

If you are using a relatively current Windows system or a Macintosh, it is probably 64 bit. To make your computer program Java correctly you will need to use a browser that supports 64 bit, Java in 64 bit, and eclipse in 64 bit. If you are running an older Windows system or a really old Macintosh, it could be 32 bit. In this case you will need to install, Java and eclipse in 32 bit format. If you are not sure whether your computer is 32 or 64 bit, you’ll need to look at the Systems settings. If you’re in Section 10, the TAs can help in lab. If you’re in Section 1, the TAs or I can help during office hours or the IT people in the Engineering Practice Facility can help.

Instructions for installation during the laboratory are below. In lab, we have the software downloaded onto thumb drives so we don’t choke the wireless network. Students in Section 1 should download the software from the URLs.

## Install the Java Runtime Environment (JRE)

The first step is to install the JRE. If you have a Macintosh computer, this already installed (unless you’ve removed it or are running Lion that does not contain the JRE).

If you don’t have the JRE installed:

1. Place the thumb drive in your USB port (or download the software from: http://www.oracle.com/technetwork/java/javase/downloads/jre8-downloads-2133155.html).
2. Browse for the correct version of the Java JRE.
   1. jdk-8u25-windows-i586.exe is for 32 bit Windows systems.
   2. jdk-8u25-windows-x64.exe is for 64 bit Windows systems.
   3. jdk-8u25-macosx-x64.dmg is for Macintosh systems that don’t already have the JRE
   4. jdk-8u25-linux-i586.gz is for 32 bit Linux systems.
   5. jdk-8u25-linux-x64.gz is for 64 bit Linux systems.
3. For Windows users: An installation wizard will be displayed on your screen**. Follow through with the default choices in the wizard so the software will be in the standard location.** It’s easier for the TAs if everyone has the same installation setup.

## Install the Eclipse Integrated Development Environment (IDE)

Copy the folder named eclipse (or download Eclipse IDE for Java Developers (Eclipse Luna SR1a(4.4.1)) from <http://www.eclipse.org/downloads/> for students in Section 1) into the directory that you are using for this class or the applications directory on your system.

The applications directory is C:\Program Files if you’re using a Windows system. You will probably want a shortcut available on the desktop, so make it now.

Macintosh users will have to uncompress the folder on the CD, and save it to their Applications directory.

All of the software is stored in the Eclipse directory on the thumb drive. The standard code conventions (used in the previous section) apply here.

* Linux systems use files with linux
* Macintosh systems use files with macosx
* Windows systems use files with win.
* The x86\_64 label means that the system is a 64 bit system.
* Files without a 64 bit label are for 32 bit machines.

## Check Your Installation

The last thing we need to do is verify that your installation is working. This is done by running a Java program. The program is similar to the first one we had in class and is called CSFacts.java.

Start eclipse.

Create a workspace. This is a folder where your programs will be stored. Have one workspace for the class. Put your workspace in your CS 1323 Spring 2015 folder and call it something like 1323 Programs. This is what I do for the class. You will navigate to the folder you created on the first page and select it. Then create a new folder called 1323 Programs.

When the workspace opens, you need to enter the workbench. This is done with the turned arrow on the right hand side of the screen.

You first need to create a new Java Project. This is done with File -> New -> Java Project. Call it Laboratory 1.

Then create a new class. This is done with the green target button. The source folder should be Laboratory 1/src. Name the class CSFacts. It is absolutely necessary to get the capitalization and spelling exactly correct. There cannot be any spaces.

Eclipse will try to help you out by entering this:

public class CSFacts{

}

Enter the program below by typing very, very carefully.

/\*\* This program prints out fun facts about CS.

\* **@author** Deborah A. Trytten (but put your name here)

\* **@version** 1.0

\*/

**public** **class** CSFacts

{

// This is the main program. The instructions here

// are what is done when the program is run

**public** **static** **void** main(String[] args)

{

System.*out*.println("Computing jobs are here to stay, “

+ “regardless of where you are located.");

}

}

Run the program by clicking the green circle with a white arrow. The program should print out the fun CS fact above to the console at the bottom of the screen. If there are errors, see the TA for help.

Now change your program by choosing your favorite fun CS fact from this list: <http://computingcareers.acm.org/?page_id=4>

You will do this by editing the println statement in the middle of the main program. You need to keep the double quotes in place, since this is what tells the computer that the characters are a String to print.

The last thing to do is to access the documentation. Open your browser and do a search for “Java API”. Look for a website from oracle.com. You will want to bookmark this page once you’re sure you’ve found the right one. Go to the Java documentation. Find the String class by searching in the class names on the left.

Once your program is running and you’ve found the String class in the Java API, call the TA to get credit for lab this week.