# 17-654/17-754: Analysis of Software Artifacts

## Jonathan Aldrich

## Assignment 0 (Programming): Crystal Warm-up

**Due Thursday, January 18, 10:30am**

Turn in a text file named <username>-17654-A0.txt, where username is your Andrew id, electronically in the Blackboard drop box. At the top of the document, state your name, Andrew id, and how long you spent on the assignment.

**20 points**

**Assignment objectives:**

- Set up the Crystal analysis infrastructure in your environment and successfully compile and run an analysis.

**Part 1** (20 points)

The goal of this assignment is to get the Crystal analysis infrastructure running, to facilitate Assignment 1 (due Tuesday). You should begin Assignment 1 immediately after completing this assignment; this assignment is more or less a mechanism to make sure everyone has the Crystal software working early.

Download and install the Java Development Kit 5.0 from:

http://java.sun.com/j2se/1.5.0/download.jsp

Click on **Download JDK 5.0 Update 6**

Install by executing the downloaded file

Download and install Eclipse SDK 3.2.1 from:

http://www.eclipse.org/downloads/

Click on **Eclipse SDK 3.2.1** (for Windows)

For other platforms, click on **Other Downloads for 3.2.1** and choose your platform.

Install by unzipping the downloaded file.

The first time you run it (via the eclipse executable in the eclipse/ directory), it will ask for a workspace location. The default is generally fine for most people.

Download Crystal from Blackboard, and install it using the instructions you find there. Also download Countdown.java from Blackboard.

The distribution of Crystal comes with the ASTPrintAnalysis analysis implementation that prints out an indented summary of the abstract syntax tree of a program. Turn this analysis on by uncommenting the line beginning with ASTPrintAnalysis in CrystalPlugin.java. Save your edits to CrystalPlugin.java. Choose Debug… from the

Run menu. Choose Eclipse Application and click on the New icon. Choose Run an application: org.eclipse.ui.ide.workbench, and click on Debug.

In the Eclipse window that pops up (the "Child" window), choose Project… from the File | New menu. Pick Java Project and click Next. Type "Countdown" for the project name and click Finish. Chose File | Import… and pick General | File System. Browse to the directory where you stored Countdown.java (downloaded from Blackboard) and check the box next to Countdown.java. Click Finish.

Choose Window | Show View | Other…. Go to Crystal User Console and pick User Console, then click OK. Choose Crystal | Run Analysis.

**Turn in a text file with the output of the analysis that appears in the User Console window.** Note: you may find it helpful to double-click on the User Console text, which will fill the whole Eclipse environment with the User Console. Use Ctrl-C to copy the text (on Windows, at least) to an editor from which you can save it.

For students who have little prior experience in Java, going through some of the basic "Trails" on the Java Tutorial may be helpful for the Java-related assignments in this course:

http://java.sun.com/docs/books/tutorial/index.html