CSCI 1300

Intro to Computing

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Lecture 23 March 8, 2013

Java: Arrays and Graphics

Upcoming Homework Assignment

HW #5 **Due: Friday, Mar 8**

Slug Race

Slug Race is due tonight in either (or both, if you like) Java and Python. May the best Slug win.

Lecture Goals

1. Java Arrays
2. Java Graphics

Python Lists (Reminder)

In Python we could make a list by just initializing one with square brackets:

```
my_list = [ ]
my_other_list = [ “Foo”, “Bar”, “Baz” ]
my_misc_list = [ 5, “Foo”, True, 483.23 ]
my_misc_list.append(18)
my_misc_list.append(“Squid”)
```

Python lets you make a list with many kinds of things in it. They could grow or shrink to accommodate different numbers of things. This makes life easy.

Java Arrays are trickier

Java has two main predefined ways to make something similar to Python's list. We could make *Arrays*, or we could use the *java.util* Collections. In this lecture we're going to focus on Arrays.

```
String[ ] words = { “Hammer”, “Proper”, “Parachute” };
System.out.println(“There are “ + words.length + “ words”.);
words[1] = “Gimble”;
String whatEverySkydiverNeeds = words[2];
```

Java Graphics

To make graphical user interfaces in any language, you need to use a toolkit. Java's main toolkit is called Swing, and it is pretty powerful. It is also fairly inaccessible to beginners.

We will be using a different toolkit called Processing. We can use it by including the library 'core.jar' in our compilation and run process like this:

```
javac -classpath core.jar:. MyFile.java
java -classpath core.jar:. MyFile
```

Use core.jar

We gain access to Processing's neat Graphics capabilities by getting core.jar. This is a *library* that extends the capabilities of Java. You can write your own libraries. There is nothing magic about them.

There is a lot of documentation on this out there at Processing.org. Google for '*Processing Javadocs*' to get the good stuff.

Processing != Java

There is a whole environment called Processing, and you can download and try it. It is about 200 meg, though. It tries to help you by giving you an editor and an environment where you can experiment. It is cool.

But, ***Processing is not Java***. It *uses* Java, and Java can use the Processing Java libraries, but if you go to Processing.org and download it, you are given something that is based on but not the same thing as Java. Just be aware of this. We will use plain Java.

Simple Example

```
import processing.core.*;

// replace both instances of Lecture23_2 with your file name.
public class Lecture23_2 extends PApplet {
    public static void main(String[] args) {
      PApplet.main(new String[] { "Lecture23_2" });
    }

    public void setup() {
       size(800, 600);
       // other stuff.
    }

    public void draw() {
      background(255, 0, 0); // set background to black
      fill(0, 0, 255);
      rect(400, 300, 200, 100);
      fill(0, 255, 255);
      ellipse(400, 300, 50, 100);
    }

}
```