

Java, with a side of Java, with  
extra Java.  
(And an Eclipse Side Salad)

*Computer Science 201*



# “Semantic Gap”

The screenshot shows a web browser window with the address bar displaying "en.wikipedia.org/wiki/List\_of\_programming\_languages". The browser's toolbar includes various icons and a search bar. The main content area is divided into sections for the letters I, J, K, L, and M. Each section contains a list of programming languages, with some languages having a "[edit]" link next to them. The languages listed are:

- I**
  - IBM Basic assembly language
  - IBM HAScript
  - IBM Informix-4GL
  - IBM RPG
  - ICI
  - Icon
  - Id
  - IDL
  - IMP
  - Inform
  - Io
  - IoKe
  - IPL
  - IPTSCRAE
  - ISLISP
  - ISPF
  - ISWIM
- J**
  - J
  - J#
  - J++
  - JADE
  - Jako
  - JAL
  - Janus
  - JASS
  - Java
  - JavaScript
  - JCL
  - JEAN
  - Join Java
  - JOSS
  - Joule
  - JOVIAL
  - Joy
  - JScript
  - JavaFX Script
- K**
  - K
  - Kaleidoscope
  - Karel
  - Karel++
  - Kaya
  - KEE
  - KIF
  - KRC
  - KRL
  - KRL (KUKA Robot Language)
  - KRYPTON
  - ksh
- L**
  - L
  - L# .NET
  - LabVIEW
  - Ladder
  - Lagoona
  - LANSa
  - Lasso
  - LaTeX
  - Lava
  - LC-3
  - Leadwerks Script
  - Leda
  - Legoscript
  - LIL
  - LilyPond
  - Limbo
  - Limnor
  - LINC
  - Lingo
  - Linoleum
  - LIS
  - LISA
  - Lisaac
  - Lisp - ISO/IEC 13816
  - Lite-C Lite-c
  - Lithe
  - Little b
  - Logo
  - Logtalk
  - LPC
  - LSE
  - LSL
  - LiveCode
  - Lua
  - Lucid
  - Lustre
  - LYaPAS
  - Lynx
- M**
  - M
  - M2001
  - M4
  - Maxima (see also Macsyma)
  - Max (Max Msp - Graphical Programming Environment)
  - MaxScript internal language 3D Studio Max
  - MIVA Script
  - ML
  - Moby

```
/*
 * Example.java
 * Mac Mason <mac@cs.duke.edu>
 *
 * Demonstrate some fundamental Javaisms.
 */
```

```
public class Example {
```

```
    public static void main(String[] args) {
```

```
        System.out.println("Starting up!");
```

```
        int i = 5;
```

```
        String x = "I am";
```

← Types!

++

```
        for (int j = 0 ; j < 10 ; ++j) {
```

```
            System.out.println(i + j);
```

```
            if (i + j < 10) {
```

```
                System.out.println(x + " " + "less than ten!");
```

```
            } else {
```

```
                System.out.println(x + " " + ">= ten!");
```

```
            }
```

```
        }
```

```
    }
```

```
}
```

Curly braces!

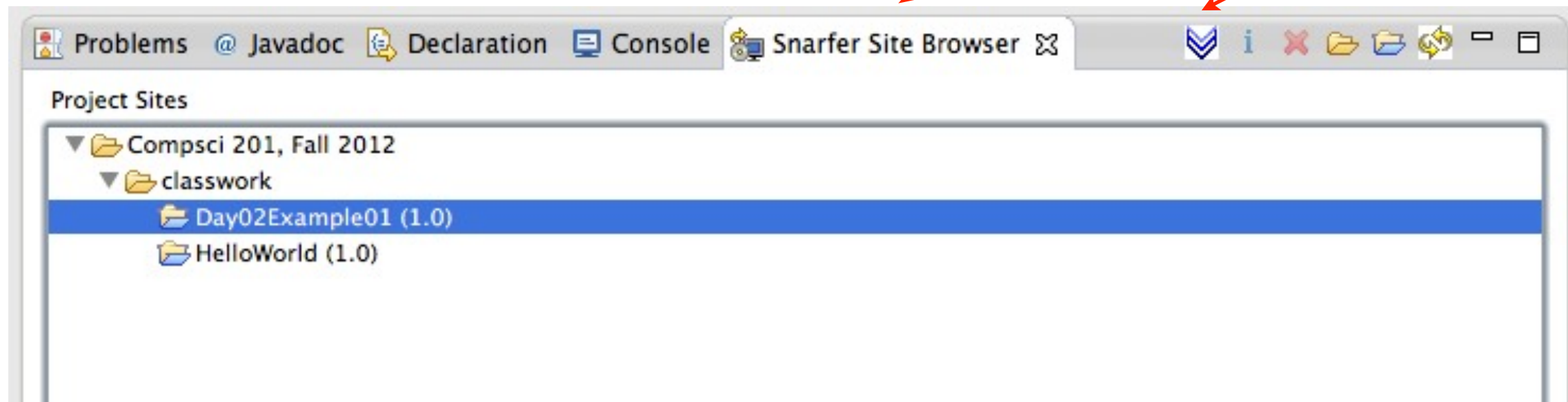
Semicolons!



# Getting that code

This tab

Then this button



<http://www.cs.duke.edu/courses/fall12/compsci201/snarf>

(Then this URL)

(Then hit Enter several times)



# Java

```
System.out.println("Foo");
```

```
int i = 5;
```

```
String x = "Green";
```

```
if (a) {  
    do something;  
} else if (b) {  
    do a thing;  
} else {  
    do whatever;  
}
```

# Matlab

```
disp('foo');
```

```
i = 5;
```

```
x = 'Green';
```

```
if a  
    do something;  
elseif b  
    do a thing;  
else  
    do whatever;  
endif
```

# Python

```
print 'foo'
```

```
i = 5
```

```
x = "Green"
```

```
if a:  
    do something  
elif b:  
    do a thing  
else:  
    do whatever
```



# APT Time

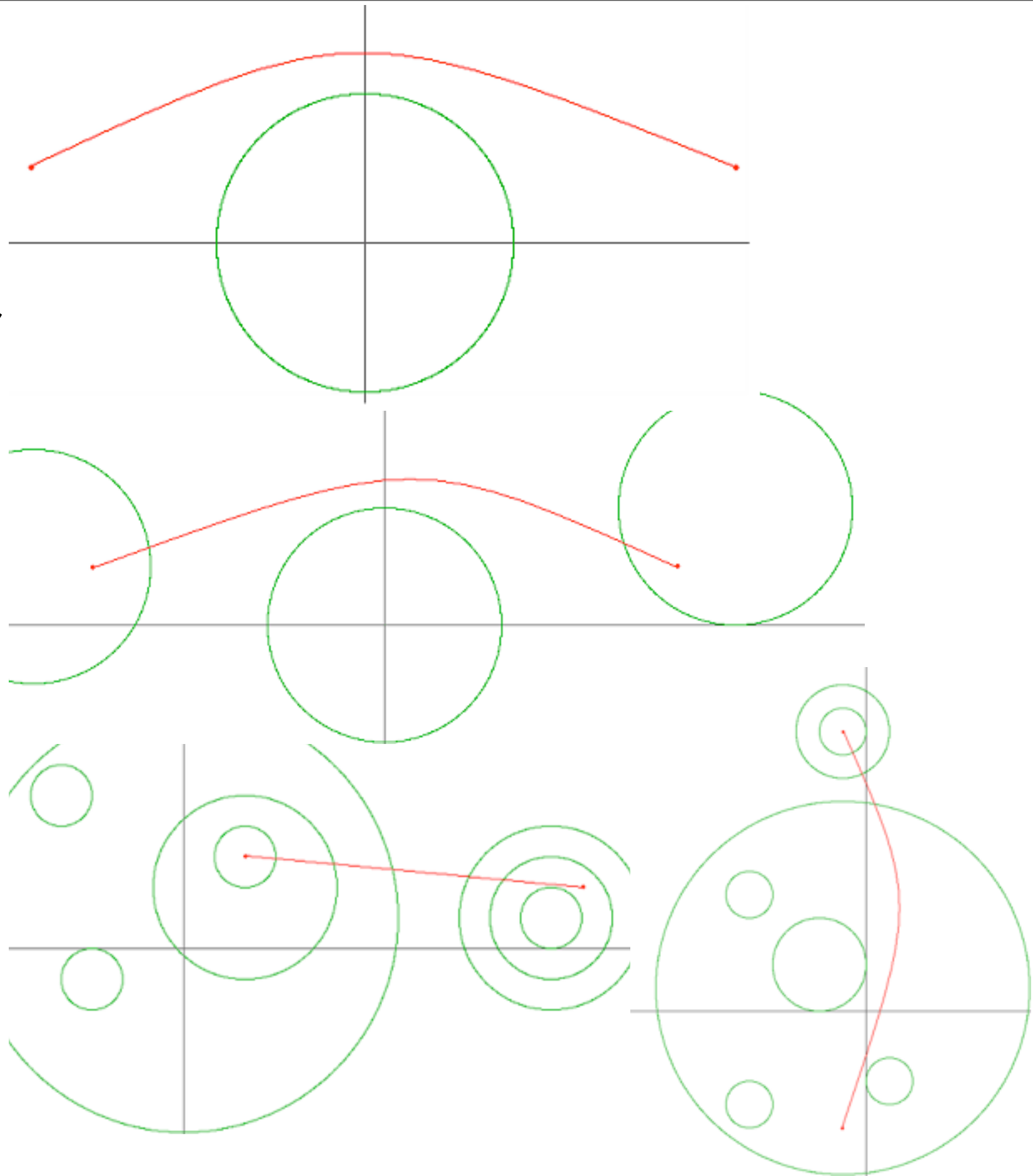
# APT Time

Circles Country is a country that contains several circular-shaped districts. Some districts may be situated inside other districts, but their borders do not intersect or touch.

Qatam is a resident of Circles Country. When he travels between two locations, he always tries to cross the fewest number of district borders as possible because crossing borders is usually a laborious task.

You are given  $n$  circles, each defined by an (integer) point  $(x, y)$ , and an (integer) radius  $r$ .

Qatam is currently at the point  $(x_1, y_1)$  and needs to get to the point  $(x_2, y_2)$ . Neither point lies on a district border. Return the minimal number of district borders he must cross to get to his destination.



# Java

```
int[] x = new int[5];  
for (int i = 0; i < x.length ; ++i) {  
    x[i] += 2;  
}
```

# Matlab

```
x = zeros(1, 5);  
for i=1:1:5  
    x(i) = x(i) + 2;  
end
```

# Python

```
x = [0, 0, 0, 0, 0]  
for i in range(len(x)):  
    x[i] += 2
```





Demo Time!



# Java Data Types

## Primitives

<b>boolean</b>	T/F
<b>char</b>	'a' or 'q' or '\$'
<i>byte</i>	
<i>short</i>	
<b>int</b>	$\approx \pm 2$ billion
<b>long</b>	$\approx \pm 9$ quintillion
<i>float</i>	$\approx 7$ sig figs
<b>double</b>	$\approx 16$ sig. figs

## Objects

```
public class CirclesCountry {  
    .  
    .  
    .  
}
```

```
public class Example {  
    .  
    .  
    .  
}
```

String

