

Welcome to Comp Sci 201!

Make sure you get a seat near the front!



How many people...



What you've gotten yourself into

Data Structures

Store

Algorithms

Process

Programming

(in Java)

Do something awesome!



What you're getting out

Data Structures

Classic structures
Classic techniques

Algorithms

Classic Algorithms
Fundamental Analysis

Programming

Programming Experience
Cool Programs!



Thinking

Two words are called *isomorphic* if the letters in one word can be remapped to get the second word. “Remapping” a letter means replacing every occurrence of that letter with another letter. No two letters can map to the same letter, but letters can map to themselves.

“abca”	“zbxz”
“zbxz”	“opqr”
“aa”	“cd”
“ba”	“yz”



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“abca”	“zbxz”	✓
“zbxz”	“opqr”	✗
“aa”	“cd”	✗
“ba”	“yz”	✓



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Given n words, compute how many (unordered) pairs of them are isomorphic.



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Given n words, compute how many (unordered) pairs of them are isomorphic.

How efficient is your solution?



Vague for now; mathematical rigor guaranteed later!

Hint: think about how much work your algorithm does when n gets twice as big, or four times as big, or ten times as big. Is there a pattern?

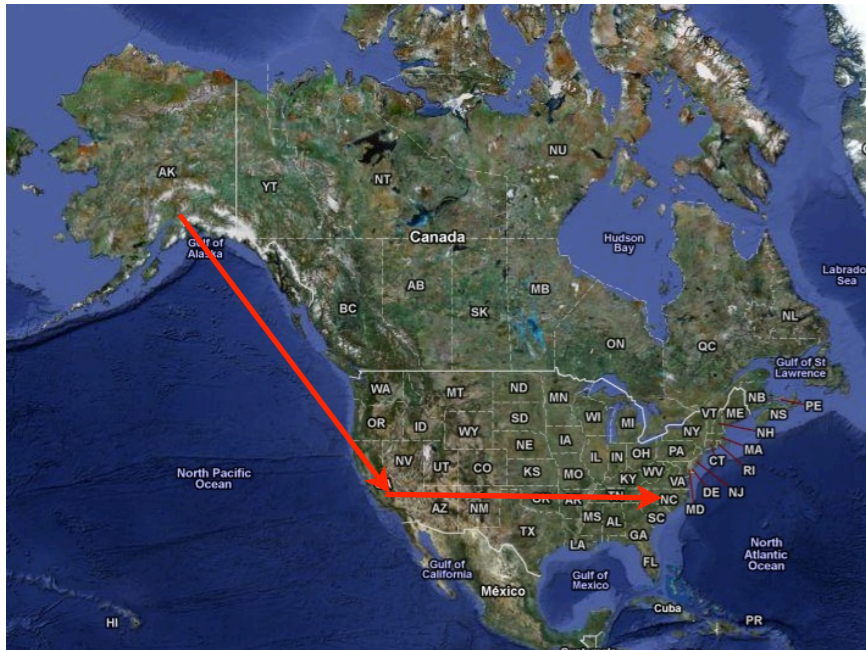
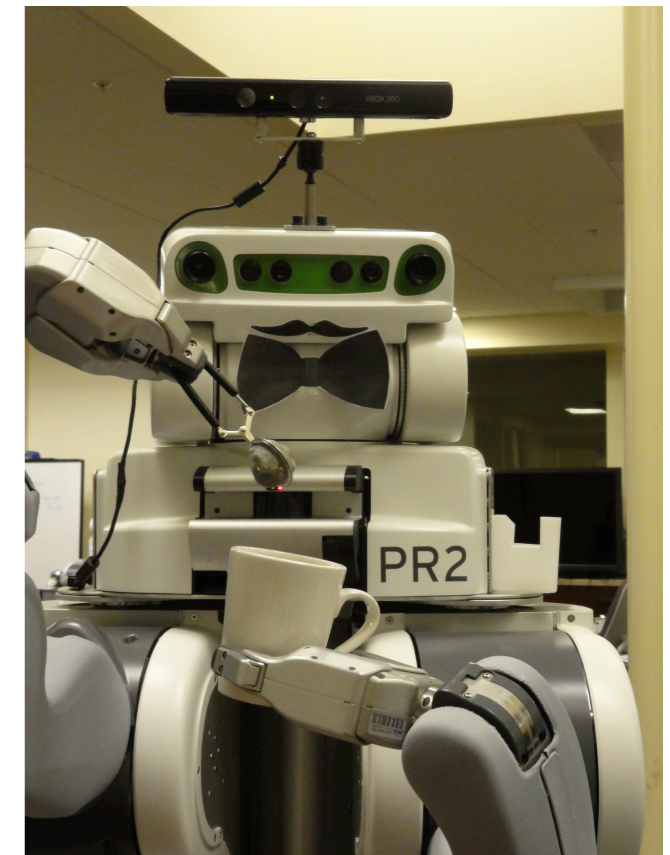


Let's talk about us

Julian "Mac" Mason

mac@cs.duke.edu

www.cs.duke.edu/~mac



Distance:	1,102.30 mi
Time:	92:30:07 h:m:s
Elevation Gain:	53,465 ft

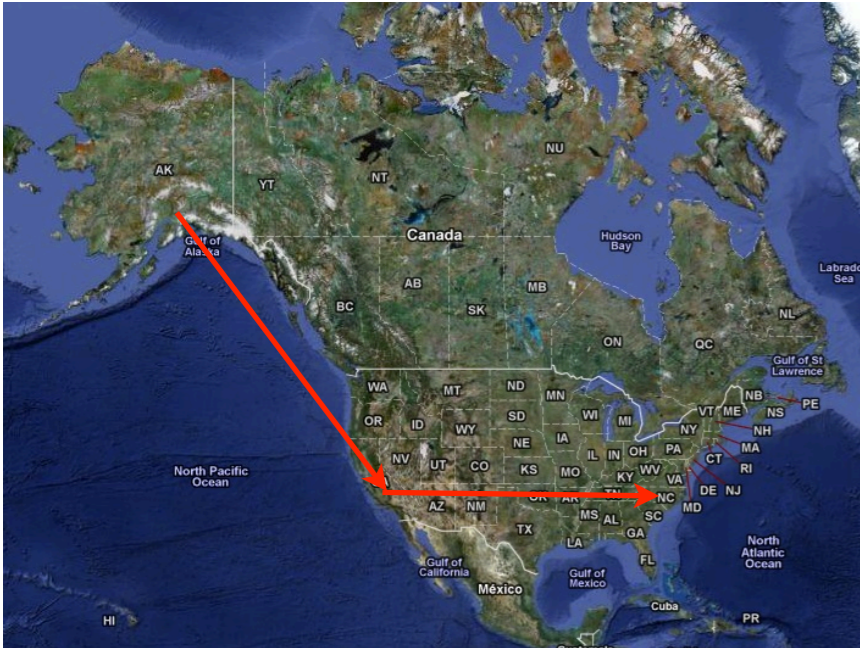
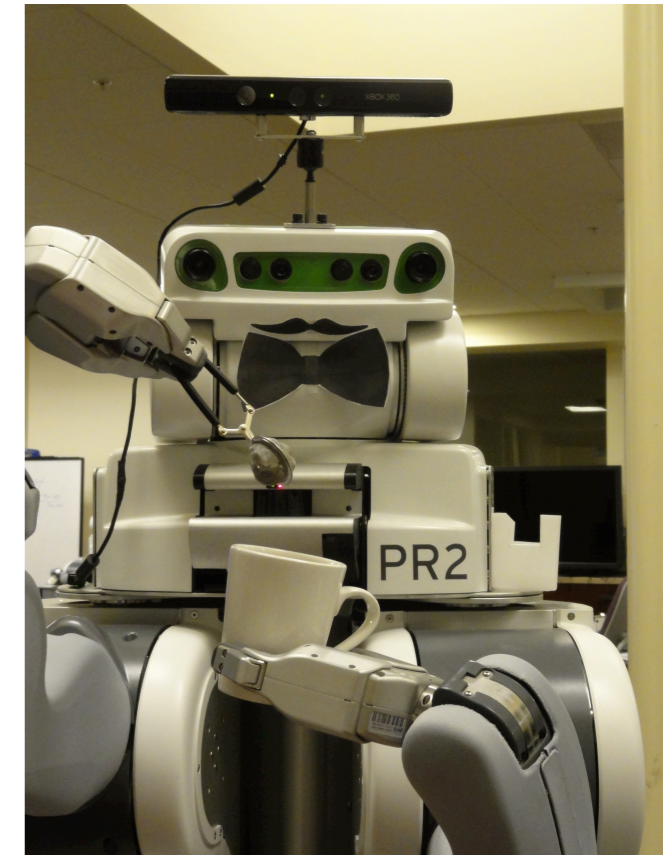


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You

Probably haven't been at Duke all that long

Have seen loops, conditionals, functions, variables...

Have done some programming
(not necessarily in Java)

Probably have a specific reason for being here



Administrivia

Homeworks

APTs

Tests

Late Policy

Yes

No

Talk to me!

Percentage

45%

10%

45%

A: 90-100%

B: 80-89%

(and so on)



Test Dates

Midterm #1

October 8th

Midterm #2

November 14th

Final

December 15th
(2PM)



Academic Honesty

You are bound by the Duke
Community Standard.

Any work or code you submit
must be yours alone.

Talk to your classmates!

(But don't take code from them, or give code to them)

(or anybody else)

Cite your sources.

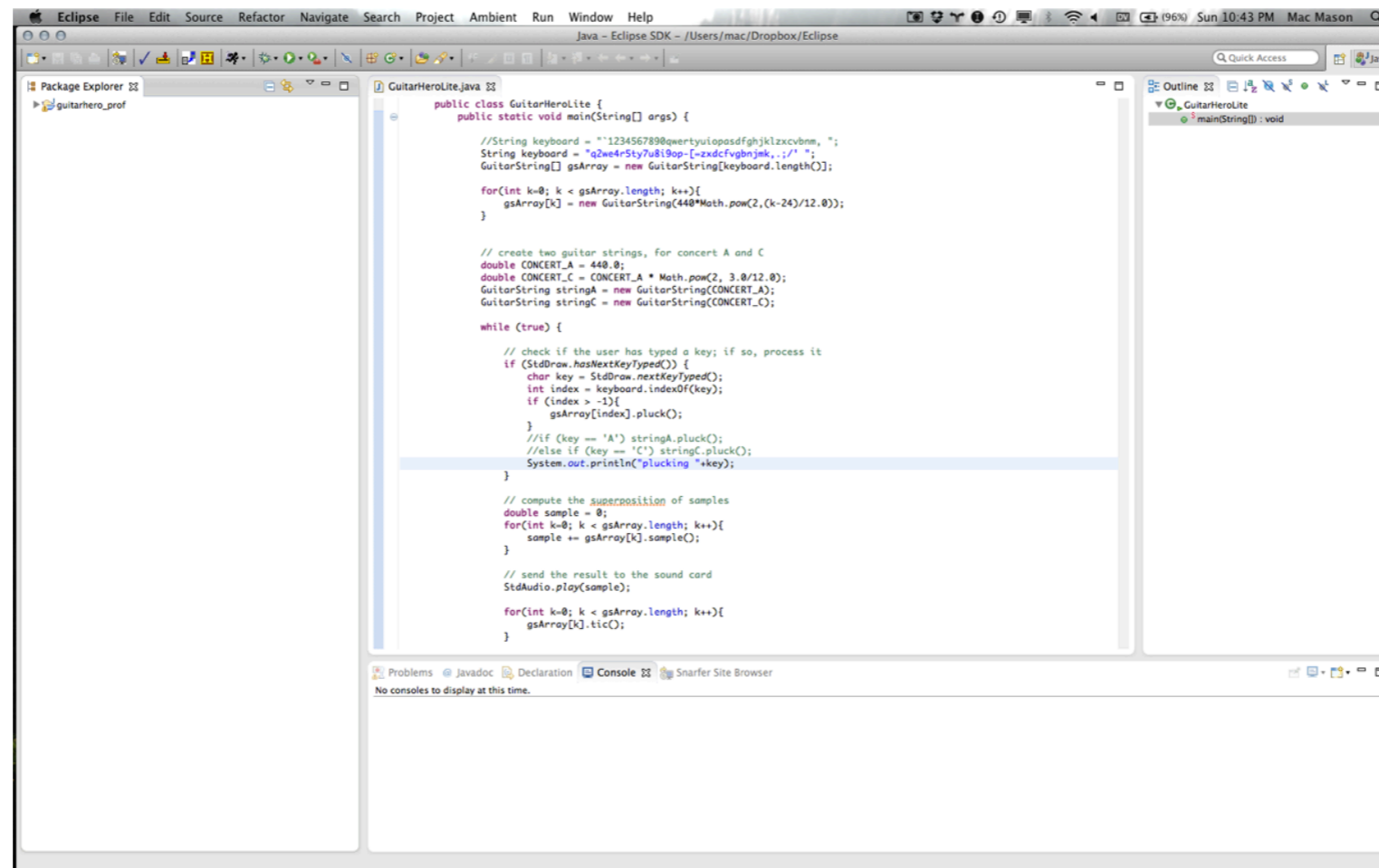
If unsure, ask. Permission is possible; forgiveness is not.

Tools

Eclipse Integrated Development Environment (IDE)

+

Ambient



Instructions here:

<http://www.cs.duke.edu/csed/ambient/files.htm>



A Classic

```
/*  
 * HelloWorld.java  
 * Mac Mason <mac@cs.duke.edu>  
 *  
 * Implements the classic Hello, World! program.  
 */  
public class HelloWorld {  
  
    public static void main(String[] args) {  
        System.out.println("Hello World!");  
    }  
  
}
```

On their first day in the temple, the Java master posed the following three questions to the novices:
“Oftimes, when we acquire a new language or library, the first program we write is Hello, World.
Its purpose is to inscribe these words in some fashion that will demonstrate the expected behavior of the technology.

After this is done, the program is never run again.

“Now: why does it say hello, and not also goodbye?”

“And: why say hello to the world, when the audience is but a single soul who will discard it after its first cry is uttered?”

“And: why should it utter a greeting, which will never be answered in kind?”

Speak me a word which means hello and goodbye —
is it not the first cry of an infant?



For Wednesday:

Read the Syllabus!

Ask any questions you have!

Work on getting Eclipse + Ambient installed

