CS1110 Wrapper classes, stepwise refinement 23 Feb

Thursday's lecture: no reading, *but be there or be square (or lost)*!
•Recursion can be a difficult topic, but we'll make it easy.

Prelim: 7:30PM Thursday 25 February (two days from now)

Cornell's Learning Strategies Center posts a lot of great information on study skills, taking exams, time & stress management, etc.
http://lsc.sas.cornell.edu/SSWorkshops/SKResources.html.

Every day after classes, retrieve your notes …
--- you *do* take notes, don't you? ---
…and read them over.

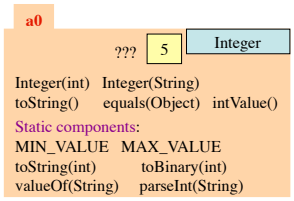
This takes very little time, and yet:
1. really makes material "stick" in one's mind, and
2. helps you figure out what you don't understand early on, so you can get it straightened out faster.

This was a real game-changer for me. Professor Lillian Lee

Wrapper classes. Read Section 5.1 of class text

Soon, we'll wish to deal with an **int** value as an object.

"Wrapper class" Integer provides this capability.



An instance of class Integer contains, or "wraps", one **int** value.

You can't change the value. The object is *immutable*.

Instance methods: constructors, toString(), equals, intValue.

Static components provide important extra help.

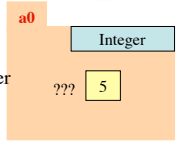
Sandwich wrapper

What is a wrapper?
Something that holds another thing
–wraps around it

Spring rolls wrappers

cupcake wrapper

an **int** wrapper



Each primitive type has a corresponding wrapper class. When you want to treat a primitive value of that type as an object, then just wrap the primitive value in an object of the wrapper class!

Primitive type	Wrapper class
int	Integer
long	Long
float	Float
double	Double
char	Character
boolean	Boolean

Each wrapper class has:
- Instance methods, e.g. equals, constructors, toString,
- Useful static constants and methods.

Integer k= **new** Integer(63); **int** j= k.intValue();

You don't have to memorize the methods of the wrapper classes. But be aware of them and look them up when necessary. Use Gries/Gries, Section 5.1, and ProgramLive, 5-1 and 5-2, as references.

Class Vector

An instance of class Vector maintains an expandable/ shrinkable list of objects. Use it whenever you need to maintain a list of things.

Values of primitive types cannot be placed directly into the list of a Vector. That's why we have the wrapper classes. In the interactions pane, we will do a few things, like these:

```
import java.util.*;
Vector v= new Vector();
v
v.add(new Integer(2));
v.add(3);
v.add('c');
```

In newer versions of Java, v.add(1) is allowed; the 1 is wrapped in an Integer object and the name of that object is added to v. Doesn't work in older versions.

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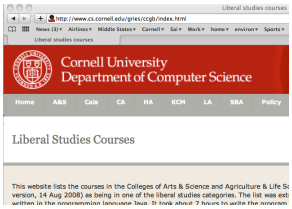
Example of a program that deals with Strings
Creating a web page giving liberal studies courses
http://www.cs.cornell.edu/gries/ccgb/index.html

Java program reads the online Courses of Study webpages and extracts the courses that are liberal studies courses in A&S and CALS.

It builds tables of A&S, CALS, CA, HA, KCM, LA, and SBA courses and produces the liberal studies course website



String manipulation is key concern of this lecture. But OO structure of the program will also be discussed

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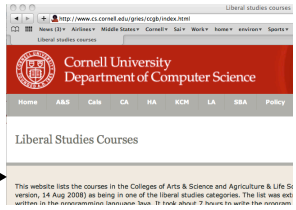

CA: cultural analysis
HA: historical analysis
etc.

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