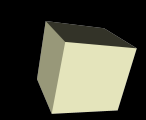
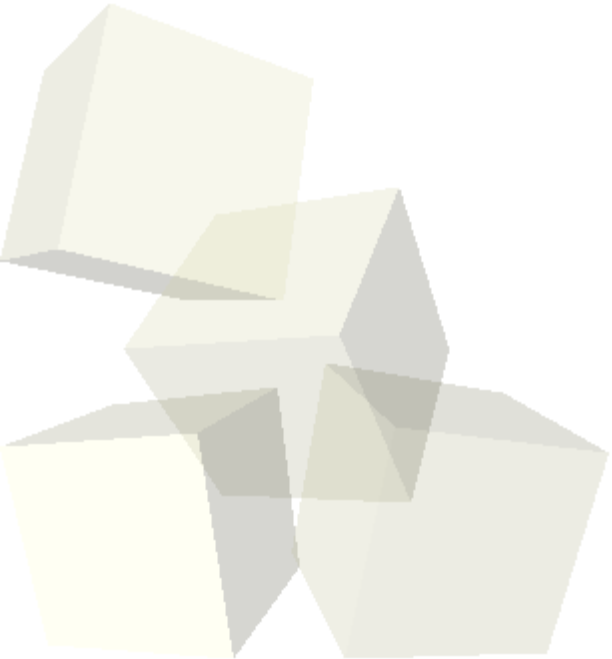
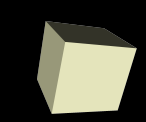


Arrays

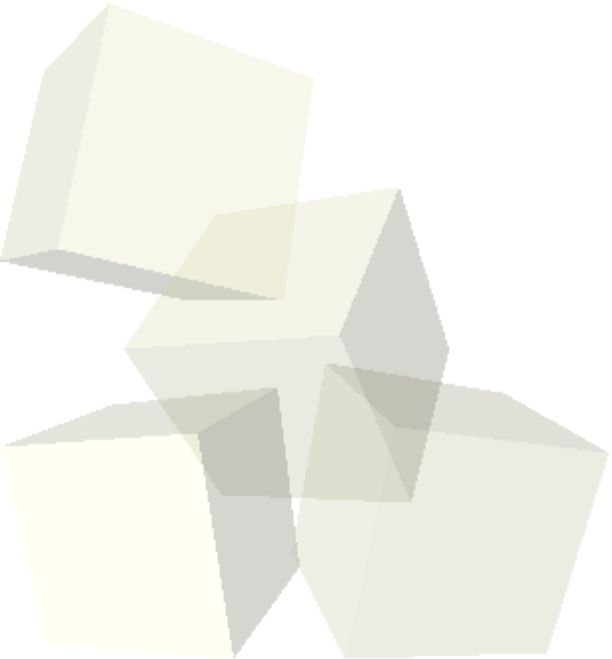
11/14/2007





Opening Discussion

- Let's look at solutions to the interclass problem.
- Sitting and listening vs. following along.



Collections of Objects

- We saw in Alice how there are situations where we needed to have collection of different things.
- This is a general need in programming. We need to have some simple way of dealing with multiple objects.
- Java actually provides many ways for dealing with these collections of objects.
- Today we begin with the one type of collection actually built into the language instead of the libraries: arrays.

Arrays

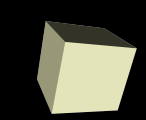
- Just like in Alice, an array in Java is a fixed length collection of things. Unlike Alice, arrays work well in Java.
- We can make an array type by placing square brackets after any type in Java.
  - int[] a;
  - String[] strs;
- Arrays are reference types so we need to instantiate them. During instantiation we tell Java how large the array is.
  - a=new int[10];
  - strs=new String[6];

Using Arrays

- We get the elements out of an array by placing an integer expression in the square brackets after a variable name.
  - a[7]=5;
- The indexes go from zero to the length minus one.
- Arrays know their length and you can get it with the length property.
- It is common to have loops that run through the contents of arrays.
  - for(int i=0; i<a.length; i++) { ... }

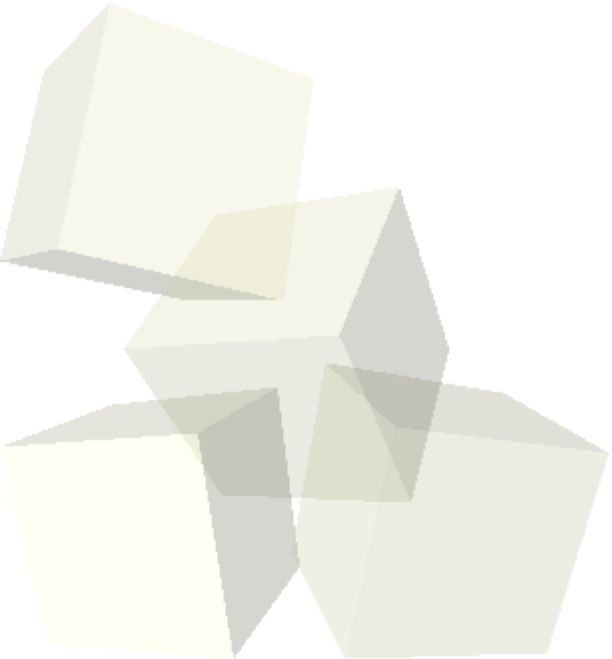
Multidimensional Arrays

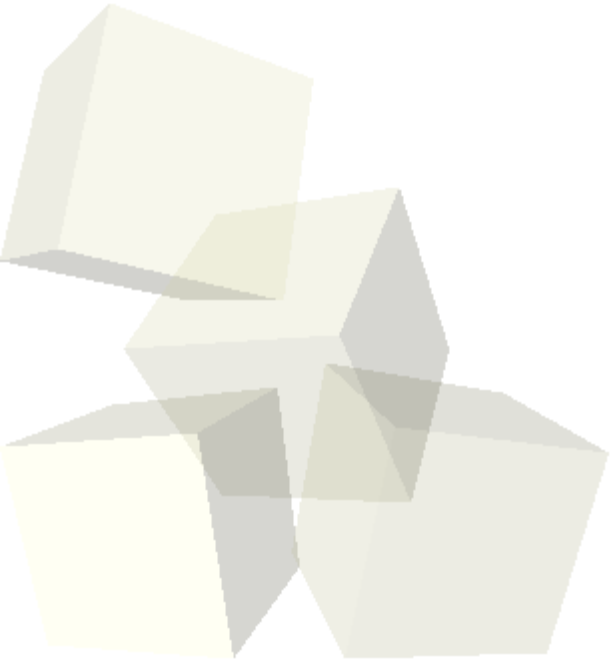
- You can make arrays of arrays (or arrays of those). The syntax is just a logical extension of the 1-D arrays.
  - int[][] a2;
  - String[][] strs2;
- We can allocate rectangular 2-D arrays with a simple syntax as well.
  - a2=new int[10][20];
  - strs2=new String[5][4];



Code

- Let's use an array inside of our payroll application.



Minute Essay

- Write a method that takes an array of ints and returns the sum of all the elements in the array.
- Interclass Problem – Do problem 12.2. You can put a number at the top of the file so that it is easy to store all the friends in an array.