



# Arrays

4/9/2008





# Opening Discussion

- Do you have any questions about the quiz?
- Let's look at solutions to the interclass problem.





# Collections of Objects

- We saw in Alice how there are situations where we needed to have collections 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.
- Remember the grading code in the Student class? Using a single array instead of six separate quiz grades would make life a lot easier.



- 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[] str;`
- 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];`
- You can also initialize small arrays.
  - ◆ `int[] a={4,7,2,9,6};`



# 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++) { ... }`



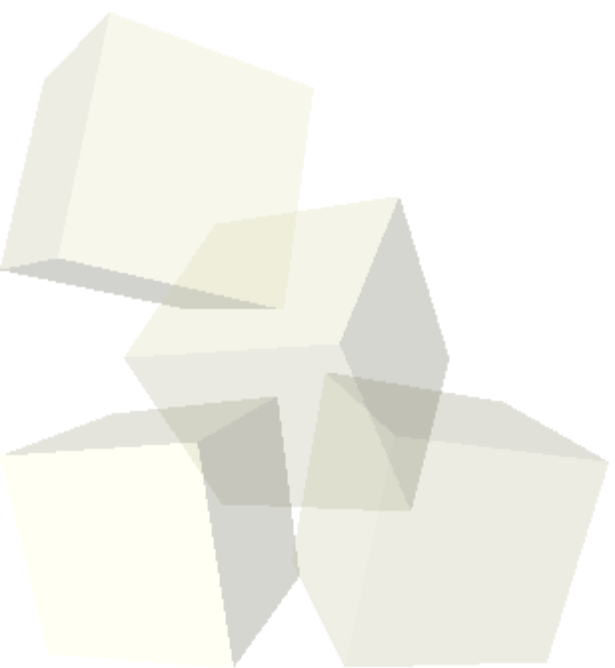
# Multidimensional Arrays

- 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[][] str2;`
- We can allocate rectangular 2-D arrays with a simple syntax as well.
  - ◆ `a2=new int[10][20];`
  - ◆ `str2=new String[5][4];`





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





- Write a method that takes an array of ints and returns the sum of all the elements in the array.
- I will be leaving for NCUR this afternoon at 4:30. There is no class on Friday.
- 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.

