2/19/2008

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

Abstract Data Types (ADTs)

- Next class we will be working with the simplest forms of abstract data types. These are things that hold data and specify how you can interact with it and what happens when data is added or removed.
- In Java an ADT is basically an interface for a container with comments giving details on what happens with each method.
- Note that it doesn't specify how things happen. That is why it would be an interface. ADTs can be implemented in many different ways.

- The simplest forms of ADTs, they each require one method to add an element and one method to remove an element. For easy of use we typically also include two other methods.
- Methods of a stack
  - push
  - pop
  - peek
  - isEmpty
- Methods of a queue
  - enqueue
  - dequeue
  - peek
  - isEmpty
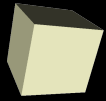
- Push and enqueue add items while pop and dequeue remove items. The difference is what item gets removed.
- A stack is last in, first out (LIFO). Just think of how you interact with a stack.
- A queue is first in, first out (FIFO). If you were British you would use the term queue instead of line for what you stand in when waiting for something.
- Next class we will implement both of these using arrays.

- Let's write an interface called MyStack with the methods we said should be in it. Make the interface generic so it can handle any type.
- Now let's write a class called ArrayStack and make it implement MyStack. Fill in the code for ArrayStack and add a main method to test that they work.
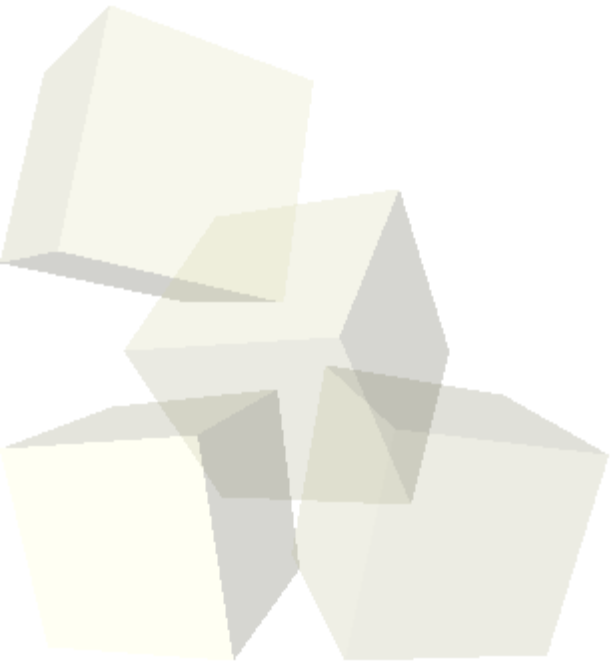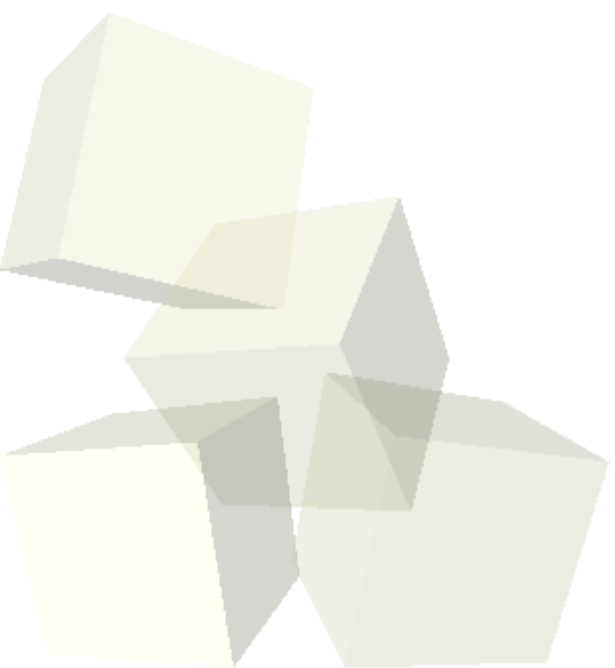
- Now we will do the same thing for a queue. Make a MyQueue interface and an ArrayQueue class.

- If we have time left I want to work on the ray tracing code. We will get to GUIs and graphics soon and I think it would be very cool to integrate a ray tracer into our drawing application.

- We will re-implement the MyStack interface latter on using a linked list for the implementation. Can you describe how we might do that?
- Remember to turn in assignment #2 by tonight.
- Quiz #2 will be at the beginning of next class.
- Interclass problem – Write a class with the operations of a reverse Polish calculator. Implement it with an array based stack. I'm going to try to give you interclass problems that tie together some into bigger apps. In this case we will use this later as a piece of a graphical RPC.