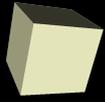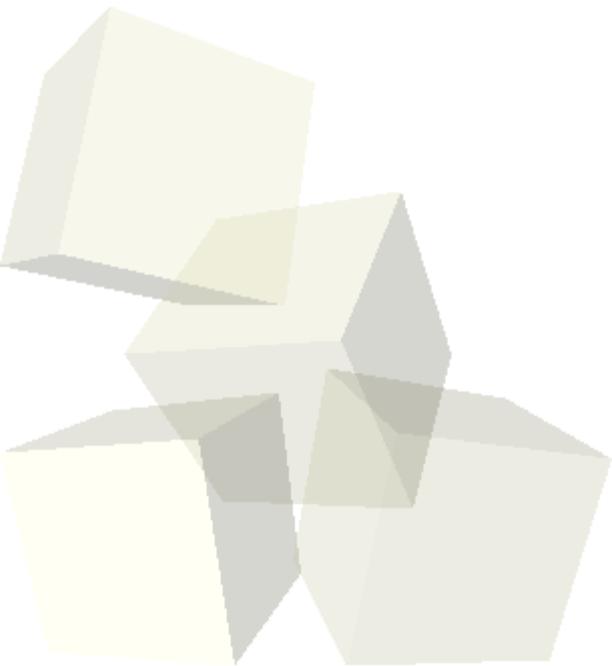3/31/2009
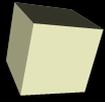
- Do you have any questions about the quiz?
- Let's look at solutions to the interclass problem.
- Do you have any questions about the assignment?
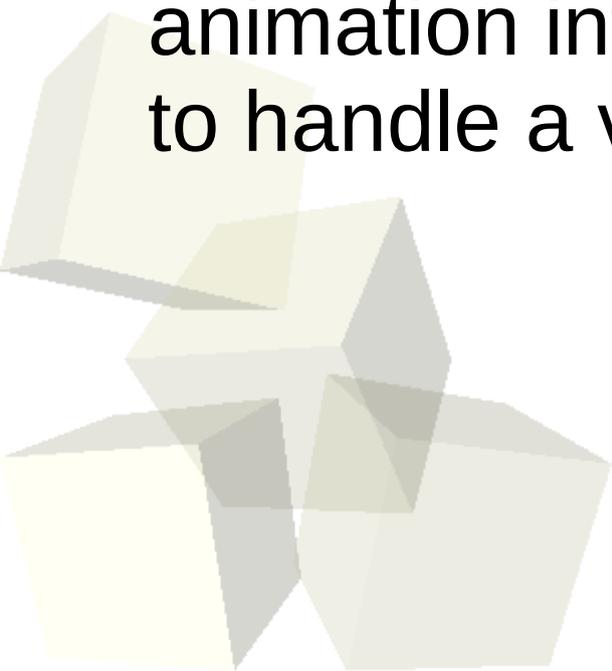- Do you have any questions about the reading?

- You should have learned about recursive functions in PAD1. A recursive function is simply a function that calls itself.
- You can use recursion to imitate loops, but we won't do that very often in C or Java. Where recursion comes in really handy is when a function needs to test more than one alternative at a time.
- This works nicely because the call stack remembers where you are in a given function so when you return back, you can take off from that point again.

- One of my favorite recursive algorithms is maze solving. This is a special case of graph traversals which are common problems in CS.
- We'll use a 2D array of ints as our maze and we can even put this into our drawing program.
- A simple warm-up piece of code is flood fill like you would have in a drawing program.
- Once we have that we can see how to convert it to do things like find the shortest path through a maze or count all paths through a maze.
- We can try to make this nice and graphical as well so it fits properly into our drawing program.
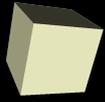
- Another one of my favorite recursive algorithms is formula parsing. This allows us to have the user type in a function and our code can evaluate it.
- We do this through "divide and conquer". We split the formula in two across the lowest precedence operator then recursively evaluate the two halves.
- We can use this to put function plotting or animation into our program if we give it the ability to handle a variable.
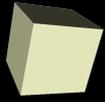
- Do you have any questions about recursion? Do you see how it can do things like search a space of possibilities or divide up a problem?
- The design for assignment #5 is due Thursday.
- Interclass Problem - Write a recursive function to find the longest path through a maze.