



# Character I/O and Testing

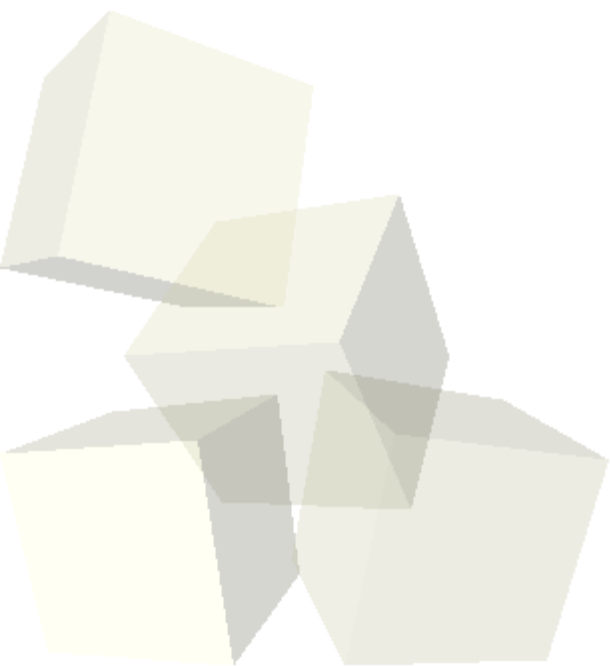
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# Opening Discussion

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





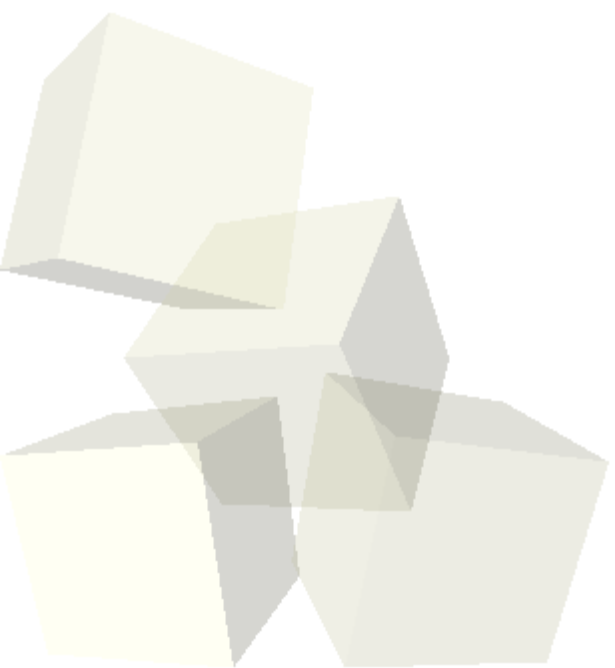
# getchar and putchar

- You can use the `getchar` and `putchar` methods when you want to work with simple text data from standard input and output.
- Let's use `man` to look at these functions.
- Personally I don't use these often as I favor `scanf` and `printf` with the `%c` option, but these special functions can be simpler to use and certainly can be faster in applications where that matters.





- When you want to work with data from files or other streams you can use `getc` and `putc`. These do basically the same thing as `getchar` and `putc`, but you get to specify the stream you are working with.





- This function provides you with additional power beyond what we could get with flavors of printf or scanf. It allows you to “unread” a character from a stream.
- This is incredibly powerful and basically essential to add to programs in order to achieve some of types of functionality.
- For example, if I made you write a function that reads an integer and leaves all characters after the integer in place, how would you do that? You have to read the non-number character that signifies the end of the number, then push it back on the stream.



- Testing is a skill that is becoming increasingly in demand. It has always been important, but agile development techniques and test driven development have pushed it into the limelight at the front of the software development process.
- The basic question is, once you have written code that compiles, how do you make sure it really works?
- Testing Strategies
  - ◆ All paths – not feasible
  - ◆ All sections – feasible, but not sufficient
  - ◆ Test boundaries and all sections of code
  - ◆ Unit testing – good for development, must include integration testing



- What do you see as the biggest limiting factor right now when you are trying to write C programs? What would you like to be able to do that you can't think of an easy way to do with what we have covered?
- The midterm is on Wednesday. The open lab this afternoon will be used as a review session.
- Interclass Problem – This is for class on Friday. Problem 31 on page 454.

