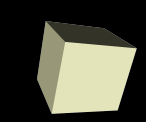

Direct Access Files

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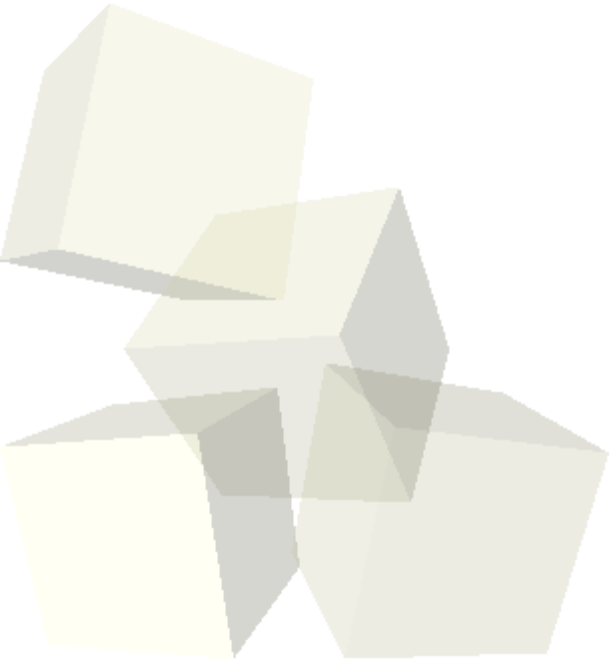
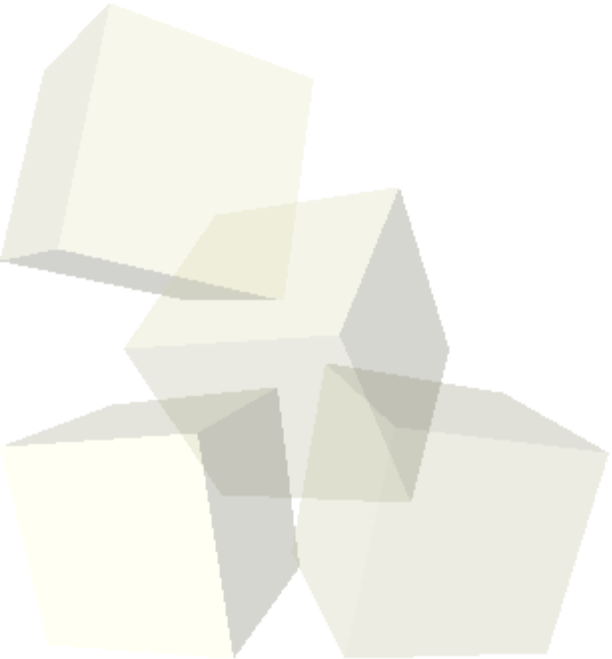


Opening Discussion

- What did we talk about last class?
- Do you have any questions about the assignment?
- Choosing networking methods.
- How do you think RMI goes about sending objects across the network?



Limitations of Streams

- Stream input can be wonderful and is all you need for many applications.
- We also saw how the flexibility of the stream model can give us great power in our programming.
- Stream programming isn't ideal for everything though. Consider a case where you need to read 10 bytes from a file beginning 1MB into the file. Why read all the way to that point if you know where it is?
- This is where direct access files come into play.
- Notice sockets can never be direct access.

Direct Access

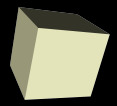
- The name pretty much says it all. A direct access file is one where you can jump to any point and start reading data.
- This is somewhat similar to the ability to direct access an array in memory. (Streams are more like linked lists in this regard.) The difference is that file contents don't have types the way arrays do.
- The advantage of this is that some operations can be done much faster. This is particularly helpful when you have very large data sets that simply won't fit in an array in memory. This is the key for databases.

Fixed Record Length Files

- The simplest way to use direct access files is with a fixed length record. With this approach you decide how many bytes each record you are going to write will occupy. Then if you want to get record n you simply jump to n*size and start reading.
- It is also simple to overwrite data in such a file. You simply jump to the location of the record and write a new record.

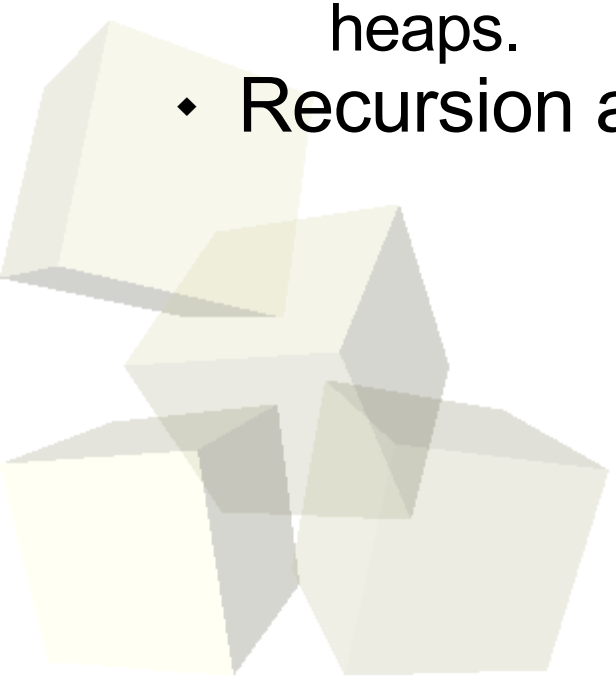
Variable Record Length Files

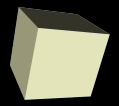
- Not everything fits in a fixed length. You can fudge it by assuming a size you think is “big enough” and use that.
- Alternately, you can go to variable length records. When you do this the complexity goes up in several ways.
  - You have to keep an index list that is fixed length.
  - Holes after records cease to be used are hard to fill.
  - There is no simple way to alter a record if the alteration changes the size. You just have to write a new record at the end and change the index.



Course Recap

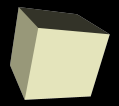
- We looked at a number of different topics in this course.
  - Object-orientation and how it is done in Java.
  - Inclusion polymorphism.
  - Immutability and how it helps in SE.
  - Arrays and the processing of them.
  - Basic data structures
    - Stacks, queues, linked lists, priority queues, binary trees, heaps.
  - Recursion and using it to solve problems.





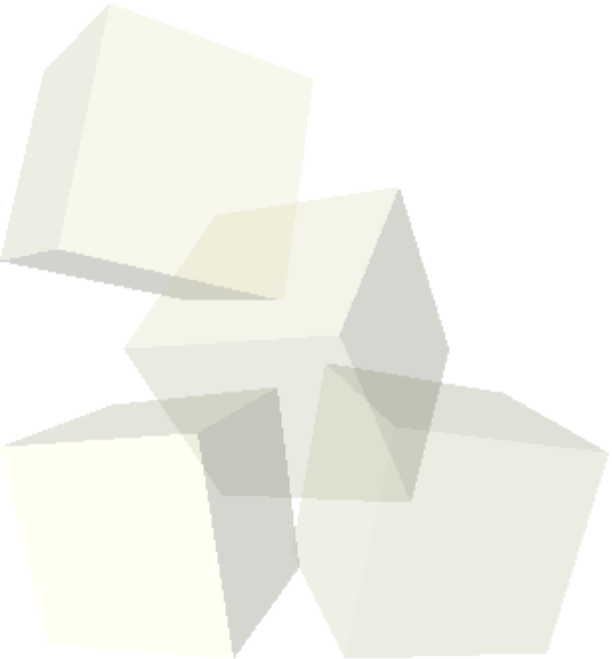
Details of Java

- You also learned about how to do some different tasks in Java with the Java API.
  - GUI building and graphics
  - Exceptions for error handling
  - Threads
  - Streams
  - Networking
- Combined, these allow you to create interesting an powerful programs.



Course Objectives

- More important than the material is if the course met its objectives.
  - Did this course make you think?
  - Has this course enabled you to think about things in new ways?
  - Do you feel you have a better understanding of the object model of computing and how to use it to solve problems?
- Are you motivated to do more? You know how to do interesting things in Java, find a pet project and practice your skills.



Minute Essay

- We get to do the course evals now. I also want you go leave a minute essay saying when you would want a review session to be. I'll be sending out an e-mail letting you know when a review sheet will be up.
- I would like you to turn in assignment #8 by the Friday the 5th.
- After the ACM meeting today they will be doing “Lewis Dunk”.