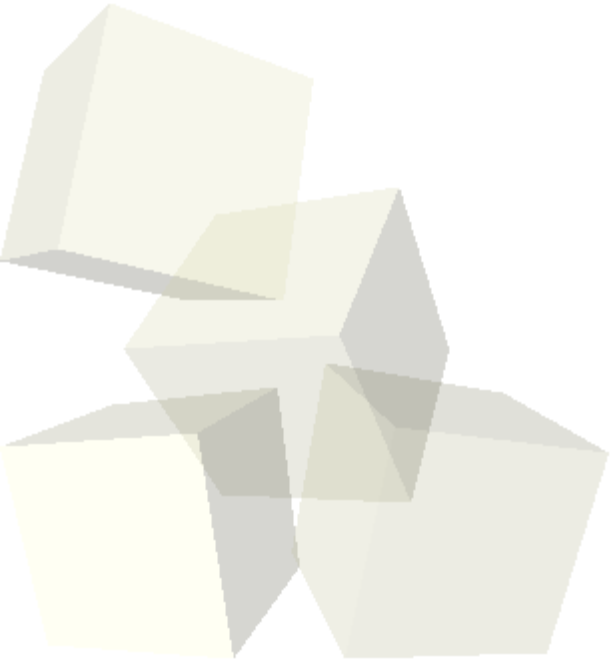
Properties and Functions

1/30/2008



Opening Discussion

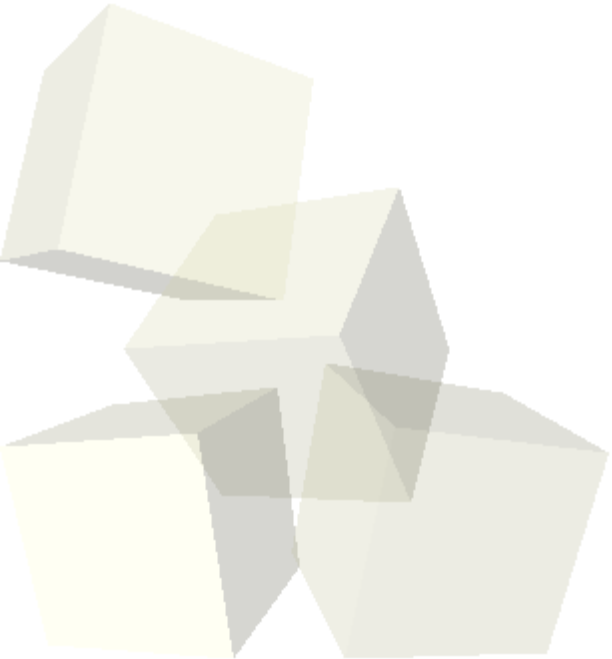
- Let's look at solutions to the interclass problem.
- What are variables? What do they enable us to do?
- What are parameters? What do they enable us to do?
- Minute Essays
  - Pace seems to be about right, but we definitely don't want to go faster. Java pacing.
  - Following on the computer.
  - Readings from the book.
  - Affecting subparts without disjointing.
- The online grades are available now. User your regular username and your starting password is your 7-digit TU ID number.

Scope

- When we create a variable or a parameter in Alice it exists just in the method we create it in.
- The segment of code a variable/parameter can be used over is called its scope. This type of scope is called local scope. In Alice this is fairly intuitive, but the same concept carries to other programming languages.
- You can make variables in two different methods with the same name and they have no relationship to one another.

Problem

- I want the mummy to keep track of how many things it has attacked and to have it say that number each time it is done attacking something.
- Let's try doing this with the variables we learned about last time.



Properties

- Sometimes you want variables with a larger scope so they can be accessed across multiple methods.
- Alice allows you to add properties to objects to get this type of behavior.
- A property is basically a variable that is stored in one of the objects. Like method variables you can pick the type and give it an initial value.
- Each different object, even copies of the same class of object, can have a different value for their properties.
- Let's set up a scene where two characters “race” and the user picks who wins by setting a property in each telling it how far to move.

Vehicles

- There are many situations where you want the movement of one object to impact another.
- For example, if one object is sitting or standing on another object, moving the supporting object should move the supported on as well.
- We could do this with doTogether moving things at the same time, but Alice provides a simpler method with the vehicle property.
- Whenever the vehicle of an object moves, that object will move along with it.

Problem

- I want to be able to find out how many steps the mummy is away from something. Because this is a task I might be doing often I want to put it in a piece of code I can call. What is more, I might change the way the mummy walks and I only want to have to change this in one place to fix it.
- Methods in Alice do things, they don't give us back values. For that we need a similar, but slightly different construct.

Functions

- We have already been creating methods for objects to give them different behaviors. We can also add functions to objects when there are things we need to calculate for a particular object.
- The difference between a method and a function is that the function returns a value to us. Methods don't. They generally just do something to change objects in the world.
- Functions can be given parameters and variables just like methods.

Minute Essay

- Do you have any questions about variables, parameters, properties, or functions? Next class we will work on flow control. That is where the logic part of this class begins to come into play. I'll use examples that incorporate parameters and variables.
- Interclass Problem – Do one of the following: problem 3.8, 3.9, or 3.10.