



# 3-D and Views

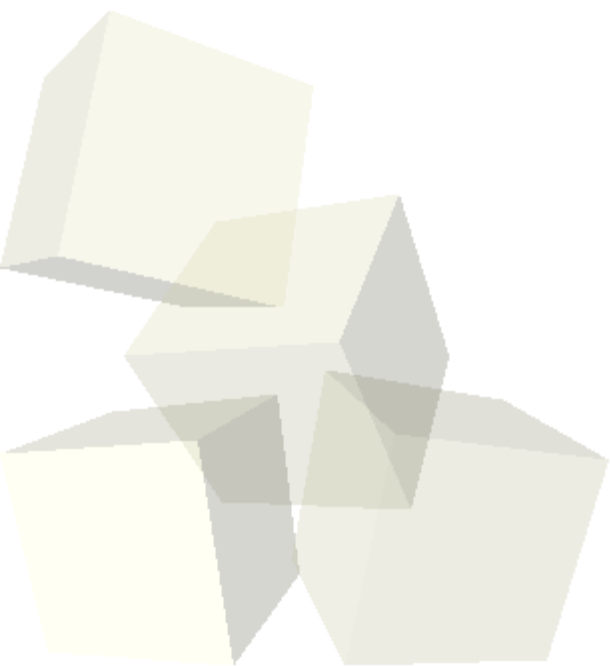
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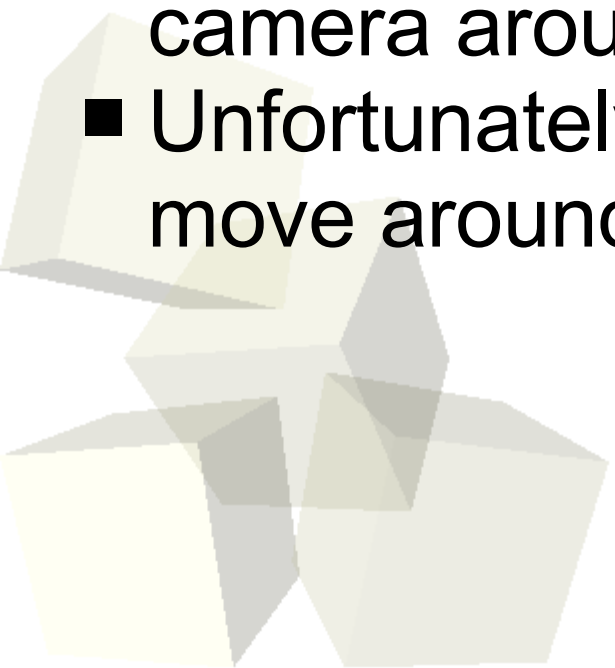
# Opening Discussion

- Do you have any questions about the quiz?
- Let's look at some solutions to the interclass problem.
- What did we talk about last class?





- So far everything that we have done in this class has had a static camera position. We put the camera in one place and simply watch what is happening.
- You might have noticed that the World contains a camera object. We can call methods on that object just like any other. This allows us to move a camera around for different shots or scenes.
- Unfortunately, giving the camera commands to move around can be quite difficult.





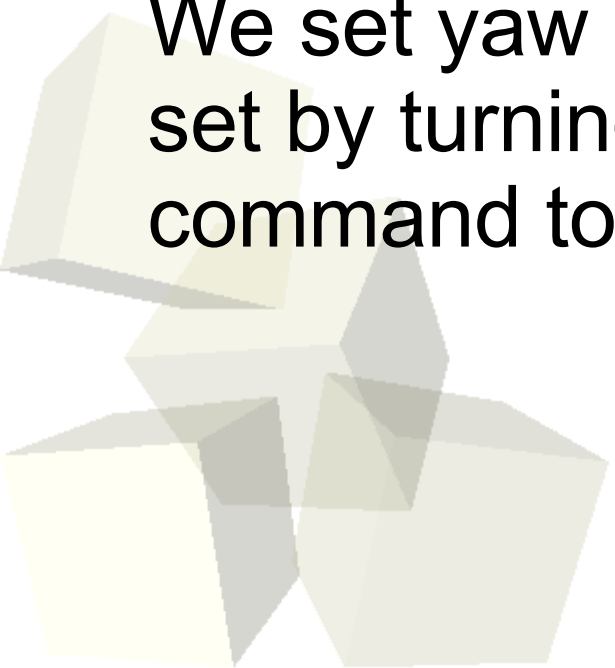
# Camera Positioning with Dummies

- Alice provides an easier way to move the camera to preset locations.
- In the object placement mode, if we expose more options we can drop dummy objects at the current camera location. We can get to the position that we want using the “driving” options to move through the scene.
- While the code is running we can call `camera.setPointOfView()` to have the camera move to a particular position to “watch” the scene. In particular, we can set it to be one of the dummies we dropped.



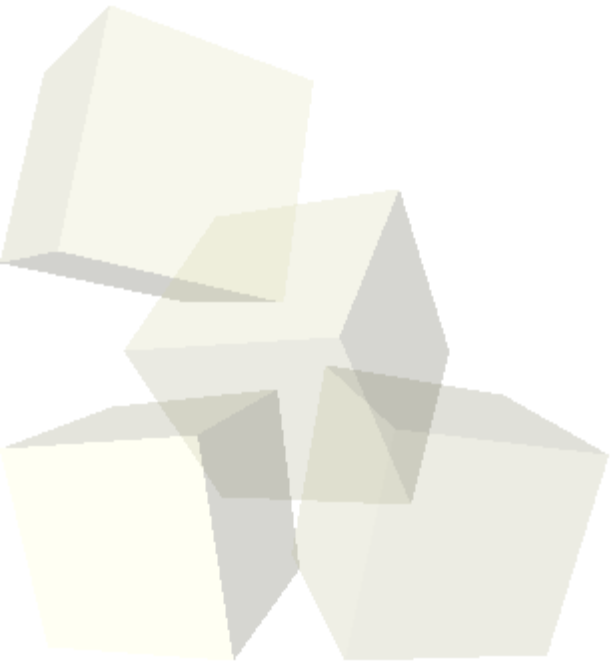
# Object Positions in 3-D

- Fully specifying the state of an object in 3-D requires six values.
- We need three values for position:  $x$ ,  $y$ ,  $z$ . These are fairly straightforward and we can make objects move up, down, left, right, forward, or backward.
- There are also three angles that specify orientation. These are called yaw, pitch, and roll. We set yaw by doing turn with left or right. Pitch is set by turning up or down. Roll is set with the roll command to the left or right.





- Let's play with some of the things we have learned so far.





# Minute Essay

- What are your thoughts on the speed and difficulty of this course so far?
- Interclass Problem – Do either problem 2.3 or 2.5.

