Methods and Problem Decomposition

9/11/2009
Opening Discussion

• Minute Essay responses
  – You have to write your own code for Monday. Do the reading to supplement the lecture if you have problems.
  – Can we make a person go upside down?
  – Why a Wombat?
  – Is there extra credit?
  – Why are there so many programming languages?
  – Positioning of actors in the world.
More comments

- Could we add cars and dogs to our city?
- Setting location twice in the act method.
- “public void” used for declarations, not calls.
- Getting pictures for projects.
- Can two programming languages talk to one another?
- Variable declaration and assignment.
- Errors in code during class.
Making the Person Walk

- Last time we were able to make the person jump around on the world. We want to make it walk smoothly in some direction.
Writing New Methods

- Last time we filled in some code in the methods that were already part of the CityScape scenario.
- Today we want to write some of our own methods. What type of functionality should we add to our person or our buildings?
Problem Decomposition

- One of the main reasons for having methods is that they allow us to break a big problem up into little pieces.
- Computer Science is often about controlling complexity. Big problems are complex and therefore hard to solve.
- You should always take a big problem and break it into pieces such that each piece is easy. Never solve a hard problem.
Design Approaches

• Top-down vs. bottom-up

• Top-down
  - Start with the big problem and repeatedly break it into pieces.

• Bottom-up
  - Start with little pieces you know how to do and put them together to solve bigger problems.
Modulo and Integer Division

- When you divide ints you get an int. Any fractional part is thrown away.
- The remainder from division is given by the modulo operator, %.
- We can do some fun things using these operators.
- Let's make our person walk back and forth.
Minute Essay

- What do you think we should do with CityScape over the next few class meetings?
- Remember that you will be showing off your interclass problems on Monday. If you have to miss class you should e-mail it to me.