

for Loop and Lists

2/9/2009

Opening Discussion

- Do you have any questions about the quiz?
- Practice with the interclass problems.
- Minute Essay comments
 - Ctrl-Z does undo. Nothing specifically caches last good compile.
 - Making actors chase one another.
 - Combat between actors.
 - Troubles with coding on your own.

Objectives for the Week

- The first objective is to be able to repeat code without doing cut and paste.
- We want to use this to have the people walk toward the closest house.
- Then we want to make it so each house can only hold one person.

Repeating Code

- So far, if I have asked you to do something several times you have just copied the code.
- This is inefficient and inflexible. Can't do it a variable number of times.
- Let's consider a new method in city:
 - `void addBuildings(int howMany)`
- Copy and paste can't do this.
- The solution is a construct called a loop.

The for Loop

- The first loop we will learn about is the for loop. These are the most commonly used loops in Java and can do anything you want.
 - `for(init; condition; iterator) {...}`
- We will start off with just counting.
 - `for(int i=0; i<number; i++) {...}`
- The variable doesn't have to be i.
- The statement `i++` is shorthand for `i=i+1`.
- Now let's add the buildings.

Lists

- Right now one variable refers to one object. We want to be able to deal with collections of objects.
- The Greenfoot API has methods in World that tell us about Actors. These all return lists. Let's look at them.
- We can also look at List in the full API. The main methods we need now are `get(int index)` and `size()`.
- List indexes start at zero.

Type Casts

- The `get()` method of `List` returns an `Object`. We need an `Actor/Person`.
- Java has a way to convert objects of one type to another. You should only do this when you know the object is actually of the type you are casting to.
- The syntax is to put the type you want in parentheses in front of the expression you are casting.
 - `(Person)list.get(i);`

House Hunting

- Let's work on a method in our person called `moveToNearestHouse()`.
- First, we should see if we can figure out how to run through all the buildings.
- Once we can do that we need to figure out how to determine which one is closest.

Minute Essay

- What questions do you have about the things that we covered today? How comfortable do you feel working in Greenfoot?