

CompSci 4

Chap 4 Sec 1

Sept 13, 2007

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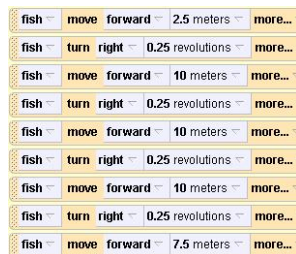


Announcements

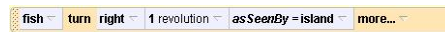
- Read Chapter 4, Section 2 for next time
- Assignment 3 storyboard due Tuesday
 - World is due next Thursday

Review

- Fish circling around island



jagged



smooth

Show world

What we will do today

- Lecture on Chap 4, Sec 1
- Classwork

- Create three animations
 - Snowpeople mods including flipping hats
 - Helicopter
 - Cameras moving
- Get checked off today and for last time



Larger Programs

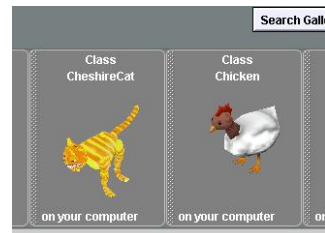
- Programs start to increase in size – many lines of code
- Games and “real world” applications have thousands, even millions of lines of code
- Want to organize large programs into small manageable pieces

Classes, Objects and Methods

- Object-oriented programming uses classes, objects and methods as basic components
- These components help you
 - Organize large program into small pieces
 - Design and think about an intricate program
 - Find and remove errors (bugs)

In your programs, you’ve used

- Classes
 - In Alice, classes are predefined as 3D models



- Objects
 - An object is an instance of a class
 - Class: Chicken
 - Objects: Chicken, Chicken2



In your programs, you’ve also used

- Built-in (predefined) methods
 - Examples: move, turn to face, say
- World.my first method
 - Example: robot on the moon from chapter 2, wrote code where an alien surprised the robot
 - All the code in World.my first method

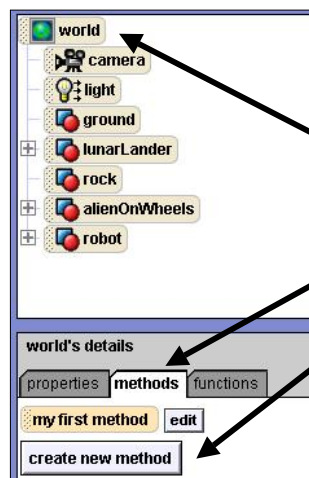
Modifying the Program

- Modify program to get robot to try twice to move toward the alien or the alien go up and down twice.
- To make modification, add more lines of code
 - makes the program code longer and more difficult to read and think about
- Show alien world from last time

A Solution

- A solution to the problem is to
 - Define our own method
 - Name the new method surprise
- Then, can drag-and-drop the surprise method into the edit box, just like the built-in methods

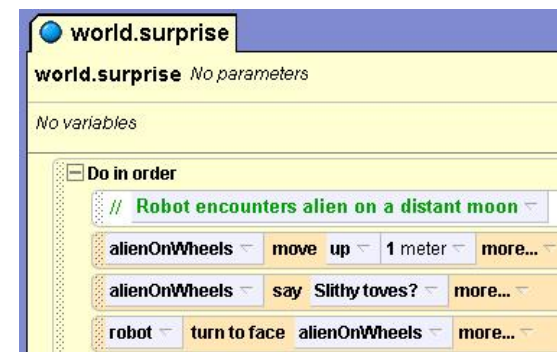
Demo: The Solution



- First associate new method with the world
- Select World tile
- Select methods tab
- Click on “create new method”
- Demo

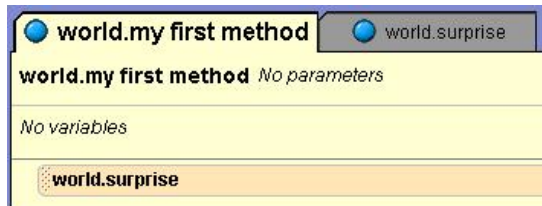
World-level method

- surprise is a world-level method because it
 - Is defined as a method for World
 - Has instructions that involve more than one object (robot, alienOnWheels)



Using the surprise method

- This method is executed by calling (invoking) the method from my first method



- For testing, invoke temporarily when world starts



investigate method



react method

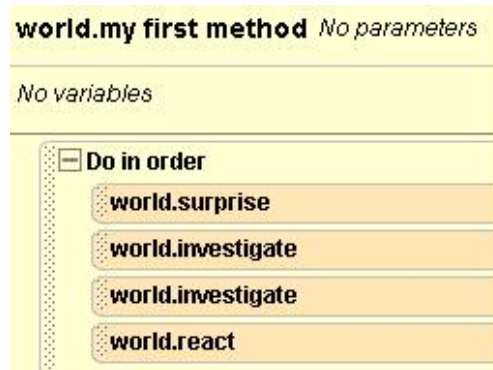


Why write our own Methods?

- Saves time – can call method again and again without rewriting code
- Reduces code size – call method instead of rewriting same code
- Allows us to think at higher level
 - Think “surprise” instead of “alien moves up, alien says something, robot turns around...”
 - Technical term for “think at a higher level” is abstraction

World.myFirstMethod now

- Move robot forward twice as far by invoking “investigate” twice



Classwork today

- Modify snowpeople to add two methods
 - catchAttention
 - Fliphats
- Move the camera with an object
 - skyride – download from CompSci 4 page
- Create airport/helicopter world with new method
 - circleTower