CompSci 4
Chap 2 Sec 2
Sep. 11, 2007

Houston, we have a problem!

Prof. Susan Rodger

Announcements

- Skip Chapter 3
- Read Chapter 4, Section 1
- Assignment 3 out
  - Storyboard due next Tues
  - World due Thurs
    - Turn in on Blackboard

What we will do today

- Lecture on Chap 2, Sec 2
- Classwork
  - Create several animations
    - Snowman
    - Monkey and ball
    - Chicken and horse
    - Boat pointing to island
    - others
  - Following along in text, some additions
  - Exercises
  - Get checked off

Last Time

- Began the animation process
  - Storyboards

- We will continue using the alien example from last time
- Show alien animation

Step 2: Implementation

- Implementing an animation requires
  - Setting up the initial scene in Alice
  - Writing the Program (script)

Create the Initial Scene

Techniques and Tools

- Mouse used to
  - Setup the initial scene
  - Approximately position objects in the scene
  - Resize objects
- Camera Navigation is used to
  - Set the camera point of view
  - Always create DummyCamera object of original BEFORE moving the camera
- Scene Editor's Quad View
  - Position one object relative to another object

Writing a Program

- "Writing" a program (script)
  - A list of instructions to have the objects perform certain actions in the animation
- Our planned storyboard (todo list) is

  ```
  Alien appears and talks.
  Robot turns to face alien, moves forward
  Alien drops down out of sight.
  Robot faces camera, turns red and says "we have a problem"
  ```

- Now translate design steps to program instructions

Translating the Design

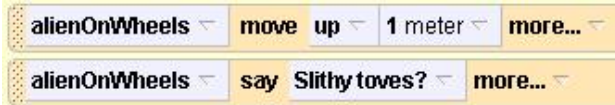- Some steps in the storyboard can be written as a single instruction
  - `robot turns to face alien`

  | robot ⤵ | turn to face | alienOnWheels ⤵ | more... ⤵ |

- Other steps are composite actions that require more than one instruction
  - `Alien appears and speaks`
    - `Alien moves up above the rock`
    - `Alien says something`

  | alienOnWheels ⤵ | move | up ⤵ | 1 meter ⤵ | more... ⤵ |

  | alienOnWheels ⤵ | say | Slithy toves? ⤵ | more... ⤵ |

Actions

- Sequential
  - Some actions occur one after the other
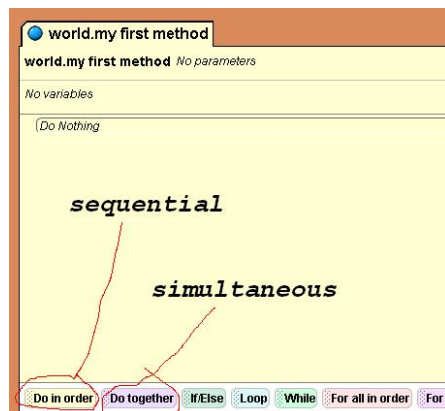   - First: aliens moves up above the rock
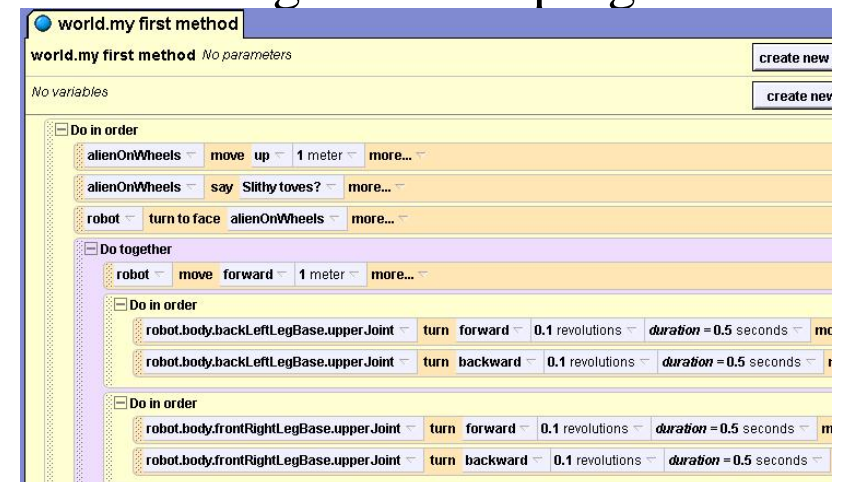   - Second: alien says something
- Simultaneous
  - Some actions occur at the same time
    - Robot moves forward while some of its legs move

Action blocks in Alice

Coding the robot program

- Things to note:
  - Nesting of DoTogether and DoInOrder blocks
 - Arguments for the move instruction – direction, distance

Testing

- Important step in creating a program – run it to be sure it does what you expect it to do
- Recommend you use **incremental development**
  - Write a few lines of code and then run it
  - Write a few more lines and run it
  - Write a few more lines and run it
- This process allows you to find any problems and fix them as you go

Comments

- While Alice instructions are easy to understand, it is often desirable to be able to explain (in words) what is going on in a program
- Use comments to explain to the human reader what a particular section of code does

Comments use //
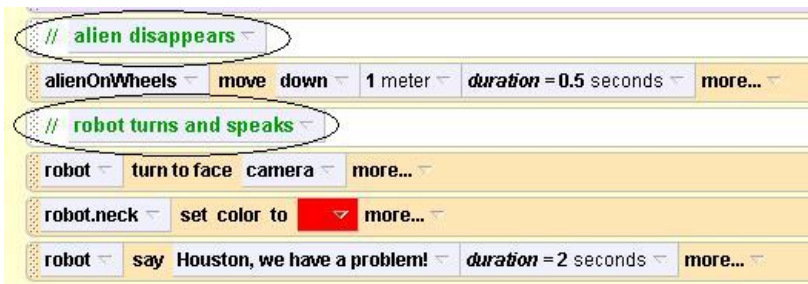
- Comments appear in green
- Alice ignores comments when program runs
- Comments make the program easier to read

Comments (cont)

- Comments can describe a large block of program code
- Comments can describe a small subsection of program code

- Show snowman, monkey, chicken and boat animations
- Classwork