

# CompSci 4

## Chap 2 Sec 2

Sep. 11, 2007

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# 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

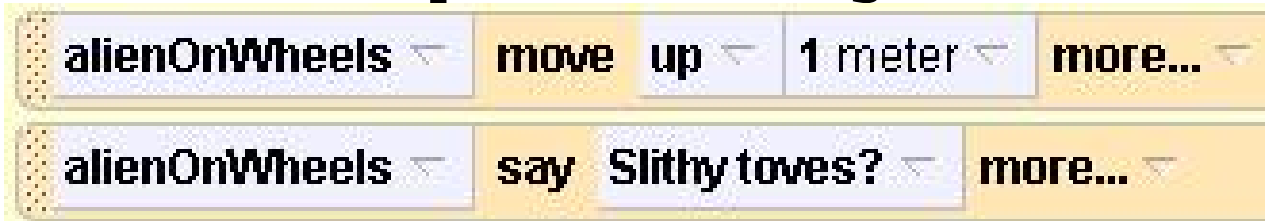
- robot turns to face alien



- Other steps are composite actions that require more than one instruction

- Alien appears and speaks

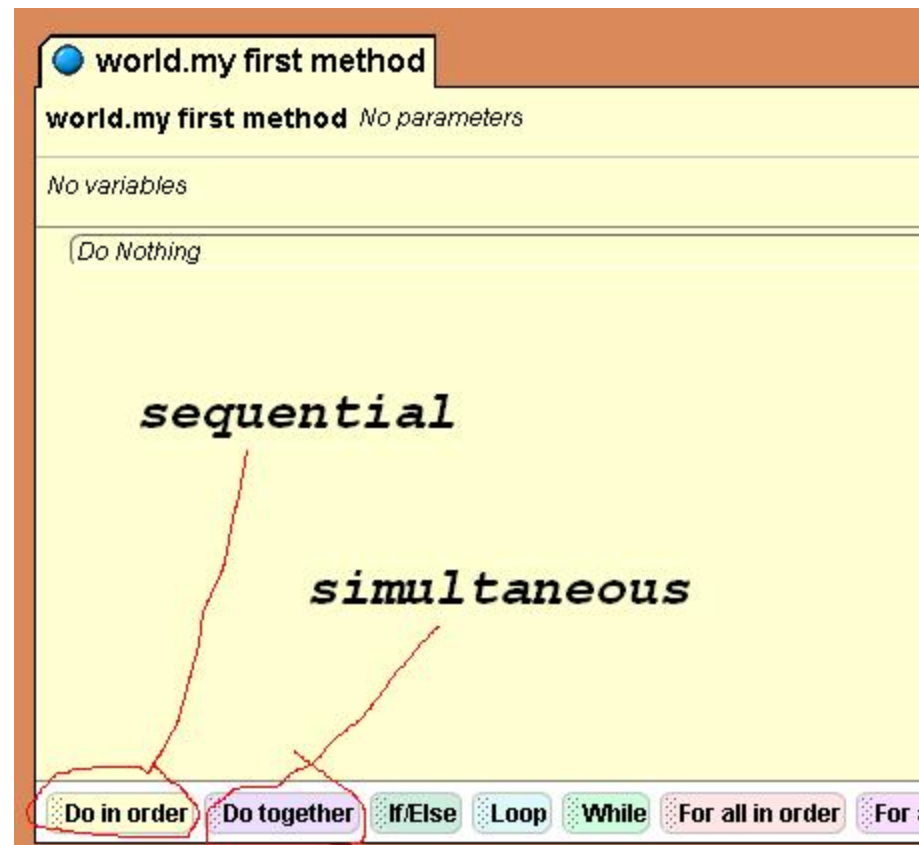
- Alien moves up above the rock
    - Alien says something



# 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

The screenshot shows a programming environment with a blue header bar containing a globe icon and the text "world.my first method". Below the header, the text "world.my first method No parameters" is displayed, followed by a "create new" button. Below this, the text "No variables" is shown, followed by another "create new" button. The main workspace contains a "Do in order" block with three sub-blocks: "alienOnWheels" with "move up 1 meter" and "more...", "alienOnWheels" with "say Slithy toves?" and "more...", and "robot" with "turn to face alienOnWheels" and "more...". Below the "Do in order" block is a "Do together" block containing a "robot" block with "move forward 1 meter" and "more...". Below the "Do together" block is another "Do in order" block with two sub-blocks: "robot.body.backLeftLegBase.upperJoint" with "turn forward 0.1 revolutions" and "duration = 0.5 seconds", and "robot.body.backLeftLegBase.upperJoint" with "turn backward 0.1 revolutions" and "duration = 0.5 seconds". Below this is a final "Do in order" block with two sub-blocks: "robot.body.frontRightLegBase.upperJoint" with "turn forward 0.1 revolutions" and "duration = 0.5 seconds", and "robot.body.frontRightLegBase.upperJoint" with "turn backward 0.1 revolutions" and "duration = 0.5 seconds".

- 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