Announcements

- We will continue to work with arrays next week.
- Assignment 7
  - Storyboard due today
  - World is due Thursday next week.

Research Study Continued

- Your choice whether or not to participate
- You will be emailed your id number from Camelia Pearson Eaves (LSRC D230)
- I do not know your number or whether you choose to participate
- Benefit – Take a survey (test) that may help in preparing you for the final exam.

What we will do today

- Lecture on Chap 10
  - Review of variables
  - Introduce arrays of objects
- Classwork – practice with arrays

Note: thanks to Wanda Dann and Steve Cooper for slide ideas
Review: Properties

- Where is the class?
- Where is the object?
- A class defines properties
- When an object is created it receives its own set of properties

State and Changing State

- State of object – each property stores info about the object
  - Example:
    - vehicle
    - isShowing

- State change

Class-level Variables

- New variables can be added to the properties of an object
  - class-level
- The value of the variable can be changed
  - The variable is mutable.
  - Can be used to track state changes.

Inheritance

- If an object (and its new variable) are saved out and given a new name, a new class is created.
  - This is inheritance!
  - The new class inherits all properties and methods of original class.
    - Did this before by adding new methods to a class and saving it out.
Examples in book

• Switch
  – Add property “isOn”
  – Boolean type property

• Steerable Car
  – Add property “direction” for amount of turn on front wheels, from -10 to 10
  – Number type property

What is an array?

• An array is a collection of objects or information organized in a specific order
• The individual components (elements) are of the same type (all object or all number, etc.)

• Analogy – Music CD
  – Collection of songs listed in order
  – CD player allows you to
    • Play songs in order
    • Play songs by specifying its number
    • Play songs in random order

Arrays in Alice

• In Alice, array is a data structure to organize objects or information
• An array is not visible, it is a way of organizing
• But…..
  – Alice has a 3D model to help you “see” the array

Example – Create a visualization of an array of people

• Add 5 people to the world
• Add an array visualization
• Not an array yet, must add people to the array

• Positions in array numbered starting with 0
Initialize array - Add Alice to Array in position 0

- Alice automatically moves to the 0 position!

Add Soldier to the Array

- Soldier moves automatically to position 1 (which is the 2cd position)!

Add RandomGuy, Skater and Rockette

- The array initialization is complete!

Set isVisible for arrayVisualization to false
- Array not seen

Setting elements in array

- Objects in an array are called elements

- Use “let” to set a position in an array

- Using “let”.
Accessing elements in an array

• Can specify an element at a particular location in the array

Repeat for all items in the array – in order

• Use “loop” – complicated version
• Note: index in loop is used in body
• What does this do?

Array vs. List

• Array
  – Elements are ordered
  – Can access a particular element – 3
  – Use ‘Loop’ - loop over elements – one at a time, OR every second element, etc
• List
  – Elements are not ordered
  – Use “For all in order”, “For all together” – does something to each element in the list – just don’t know the order this occurs

Classwork Today

• Introduction to arrays