Note: thanks to Wanda Dann and Steve Cooper for slide ideas
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
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”.

![Image showing array visualization with objects being set at different positions using the “let” command.](image-url)
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?

• 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