CompSci 4
Chap 10 Sec 2
Apr 21, 2005

Prof. Susan Rodger

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

• Next time Demos and review
• Be A UTA for CPS 4 – Fall 2005
• Research study – id number emailed to you this week
Final Exam

- Alice book Chaps 1-2, 4-10
- Mix of MC, short answer, write code for a function or method
- No html on final
- Closed book, closed notes
- Will give you a list of properties, methods and functions for an object
Final Exam – Time, Date

• Final exam is Saturday, May 7, 2-5pm
• Alternate exam times (must sign up)
  – Monday, May 2, 2-5pm
  – Wednesday, May 4, 2-5pm
What we will do today

• Lecture on Chap 10, Sec 2
  – Arrays, an ordered list
  – ArrayVisualization

• Classwork
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”.

![Diagram showing array visualization with examples of setting elements 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?

• 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 – Sorting animals

• Fix setup – add one line

...
Classwork (cont)

• AnyBallToRight obj Ball
  – Use “For all in order”
  – Compare Ball to each ball in the list
  – Ball and ball comparing to must both be yellow (active)
  – If there is any ball to the right of Ball return true
  – Return false at the end, only checking all balls in the list.
• rightMostBall
• Use “For all in order”
  – Check each ball in the list. If there is a ball that
does not have any ball to the right of it, then
return that ball.
  – There is only one active ball that does not have
an active ball to the right of it.