Class Today

- Review for Test 2 – Test is Tuesday, Nov 16
- Look at old Test 1’s and Test 2’s.
  - Lot of reading code, some writing code
  - On old Alice 3 Test 2’s – ignore problem 1 on Spring 18 and Fall 18 Test 2 – we did not do the event pointOfViewChanged
- Old quizzes back up later today

Events 1

Events 2
Events – when does it start, how does it work?

- sceneActivated
  - Starts when the world starts and executes all the code in it and then stops
- addTimeListener
  - Specify a time, such as 1.0 and then the event executes over and over, every 1.0 secs
- keyPressed
  - Every time you press any key or the particular key, the event starts executing

Events – when does it start, how does it work? (part 2)

- addMouseClickOnObjectListener
  - Specify an array of objects that you can click on, then the variable getModelAtMouseLocation is the object you clicked on
- addCollisionStartListener
  - Specify two arrays, then whenever one item from one array collides with one item from the other array, then the event starts
    - Uses the variables: getSthIngFromSetA, an object from the first array, and getSthIngFromSetB, an object from the second array, such that these are the two objects that collided.
Events – when does it start, how does it work? (part 3)

• defaultModelManipulation

– This lets you click on any object and drag it around.
– Warning: You cannot guard this!

How do you create a Scorer (or counter)

• A scorer/counter

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• A scorer/counter
  – Need a 3D textModel (object)
  – Need a textModel property of type number
  – Update the number, then display it in the 3D textModel
  – Write procedures
    • initializeScore, updateScore
How do you create a Countdown Timer

- Need a number and a 3D text object
- Update the number by subtracting and then update the 3D text to display it
- Write Procedures:
  - InitializeTimer, UpdateTimer
- Need an addTimeListener Event
  - Will update every specified time unit
  - Need if, update only if game is on

Looping structures - when and how to use each one

- Count loop
  - When you know exactly how many times the loop will execute, like 4 times

- While loop
  - When the loop stops based on a condition
  - Make sure you update and get closer and closer to making that condition false….
Looping in Array – when and how to use each one

- **For each in**
  - Use with an array, to get each item in the array to do something one at a time

- **Each in together**
  - Use with an array, for each item at the same time to do something

- **Indexing loop**
  - Use when you need the position of array item
  - Use when need to change item in array
  - Use with count or while loop, use array.length
  - Create index variable, initialize it and update it

Randomness

- **How do you generate a random number?**
  - When you use numbers there is an option for random to choose a “random” number from a specified range

- **How do you store a random number?**
  - Store it in a variable

- **How do you use a random number?**
  - Access the stored value in the variable

- **What other type of random can you create?**
  - Random boolean
Arrays

• How do you create an array?
– Create a variable/property and check the box for array

• Where should you create an array?
– In Scene Properties

• How do you access a value in an array?
– With a loop variable in an array loop
– Or with a particular index position in the array

• What is the advantage of using an array?
– Issue one instruction and apply it to every element in the array

• How do you find the position of the first red animal in an array?

Problem: Given an array of pandas named pandas. Double the size of every other one starting with the second one in the array, one at a time

WholeNumber index ← 1
while index < pandas.length
    pandas[index] resize 2
    index ← index + 2

USE array index loop!
How do you force events to only happen at certain times?

• Use an if statement with a condition that must be true
  – If statement is first thing in the event and must be true for the action in the event handler to happen
  – For example, event true if opacity is > .95

• Use a state variable – scene property
  – Use a string with values such as “setup”, “playlevel1”, “setupLevel2”, “playLevel2”, and “gameover”
  – You control game flow

How to study for the exam

• Practice problem solving
• Redo a classwork, or a procedure or function for a classwork
• Try redoing something from a lecture
• Rewatch videos, redo online quizzes
• Understand topics – reread over lecture notes
• Look at old Alice 3 test 1’s and old test 2’s
• Old Alice 2 tests – think, how would I do this in Alice 3