Class Today

- Review for Test 2 – Test is Tuesday

- 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 – when does it start, how does it work?
- sceneActivated
- addTimeListener
- keyPressed

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

How do you create a Scorer (or counter)
- A scorer/counter

How do you create A Countdown Timer
- Need a number and 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
Looping structures - when and how to use each one

- Count loop
- While loop

Looping in Array – when and how to use each one

- For each in
- Each in together
- Indexing loop

Randomness

- How do you generate a random number?
- How do you store a random number?
- How do you use a random number?
- What other type of random can you create?

Arrays

- How do you create an array?
- Where should you create an array?
- How do you access a value in an array?
- What is the advantage of using an 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

\[ \text{WholeNumber index} \leftarrow 0 \text{ while index < pandas.length} \]
\[ \text{pandas}[\text{index}] \text{ resize 2} \]
\[ \text{index} \leftarrow \text{index} + 2 \]

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
- 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, look at old test 2’s but not problem 1 on test 2’s except Spring 2019
- Old Alice 2 tests – think, how would I do this in Alice 3