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

```java
// addSceneActivationListener

declare procedure sceneActivated
do in order
  this myFirstMethod

// addTimeListener

declare procedure timeElapsed
do in order
  event getTimeSinceLastFire
  drop statement here

// addKeyPressListener

declare procedure keyPressed
  event isLetter
  event isDigit
  event getKey
  event isKey
  key:
  if event isKey $ is true then
    drop statement here
  else
    drop statement here
```
Events 2

declare procedure mouseClicked

do in order
if event getModelAtMouseLocation == this.panda is true then
  drop statement here
else
  drop statement here

declare procedure collisionStarted

do in order
  drop statement here

addDefaultModelManipulation
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
Events – when does it start, how does it work? (part 3)

• defaultModelManipulation
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.
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 and old test 2’s
• Old Alice 2 tests – think, how would I do this in Alice 3