CompSci 94
Review for Exam 2
April 2, 2019

Prof. Susan Rodger
Class Today

• Review for Test 2 – Test is Thursday

• 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
Events 1

declare procedure sceneActivated
do in order
- this myFirstMethod

declare procedure timeElapsed
do in order
- drop statement here

declare procedure keyPressed
do in order
- if event isKey $ is true then
  - drop statement here
- else
  - drop statement here
Events 2

```plaintext
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
```
Events – when does it start, how does it work?

• sceneActivated

• addTimeListener

• keyPressed
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 the particular key, the event starts executing
Events – when does it start, how does it work? (part 2)

• **addMouseClickOnObjectListener**

• **addCollisionStartListener**
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.
How do you create a Scorer (or counter)

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

- 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 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
How do you create A Countdown Timer

• Need 3D textModel (object)
• Need textModel property of type number
• Update the number by subtracting and then update the 3D text to display it

• Write Procedures:
  – InitializeTimer, UpdateTimer

• Need an addTimeEventListener 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

- While loop
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
Looping in Array – when and how to use each one

• For each in

• Each in together

• Indexing loop
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 with count or while loop, use array.length
  – Create index variable, initialize it and update it
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?
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?

• 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?
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?  See lecture March 7
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
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  – 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
• Old Alice 2 tests – think, how would I do this in Alice 3