CompSci 94
Review for Exam 2
November 13, 2018

Prof. Susan Rodger
Class Today

• Review for Exam 2 – Exam is Thursday
• Questions on Assignment 6

• Classworks 15-20 must be checked off by November 29

• Look at Exam 2 Spring 2018
  – Lot of reading code, some writing code
Events 1

declare procedure sceneActivated
do in order
  this myFirstMethod

declare procedure timeElapsed
do in order
  drop statement here

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

declare procedure mouseClicked
do in order
if 

drop statement here
else 

drop statement here

declare procedure pointOfViewChanged
do in order 

drop statement here

declare procedure collisionStarted
do in order 

drop statement here
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?

- **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)

- `addObjectMoverFor`

- `addMouseClickOnObjectListener`

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

• **addObjectMoverFor**
  – Must specify one item that the user can now move with the four arrow keys

• **add.MouseClickOnObjectListener**
  – Specify an array of objects that you can click on, then the variable `getModelAtMouseLocation` is the object you clicked on

• **addDefaultModelManipulation**
  – Then you can click and hold on any object and move it
Events – when does it start, how does it work? (part 3)

• `addPointOfViewChangeListener`

• `addCollisionStartListener`
Events – when does it start, how does it work? (part 3)

- **addPointOfViewChangeListener**
  - Must specify one or more items. Whenever any of those items move, the event starts.

- **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.
Billboard and counter

• Add a billboard of instructions
• A counter
Billboard and counter

• Add a billboard of instructions

• A counter
  – Need a number property and a 3D textString (object)
  – Update the number, then display it in the 3D textString
  – Write procedures
    • initializeCounter, updateCounter
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
A Countdown Timer

- Need a number and 3D textString (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
If statements

• When do you guard an if statement?

• How do you guard an if statement?
If statements

• When do you guard an if statement?
  – In an event that starts a lot, so it will only be true at certain times

• How do you guard an if statement?
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 change a value in an array?

• What is the advantage of using an array?

• How do you find the tallest element in an array?

See lecture March 20/23
**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 change a value in an array?**
  - You change the value at a particular index in the array to a new value.

- **What is the advantage of using an array?**
  - You can add more items to it, and the program should just work.

- **How do you find the tallest element in an array?**

  See lecture Oct 25
Changing Scenes with a Curtain

• Setup two or more scenes
• Camera

• How to change scenes
Changing Scenes with a Curtain

• Setup two or more scenes

• Camera
  – Turn it to the right until can’t see scene 1
  – Drop camera markers for each scene

• How to change scenes
  – Drop Curtain down
  – Glue curtain to camera
  – Have camera turn and orient to second camera marker
  – Change ground color/textura
  – Raise curtain
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
• Reading in book
• Understand topics – reread over lecture notes
• Look at old tests but think – how would I do this in Alice 3