This week:
- Whew!!! The last homework was tough!
- The homework for this week is easier.

Next week:
- No new lecture material.
- Monday lecture will review for optional part of final
- Work on final project. I would STRONGLY suggest starting on the final project THIS WEEK.
  - Finals weeks is stressful enough without adding completion of a project.

Finals week
- REQUIRED project “quiz”. 20 point, short (30 minute). The best way to “study” for this is to just do the Alice programming.
  11:30 Wed April 29th
- REQUIRED turn in final project by midnight April 29th.
- OPTIONAL make up test – comprehensive, 90 points, given AFTER the project quiz during final exam time in Engr 103. You MUST tell me by Friday 24th if you intend to take the optional part of the final.

Responding to Events
- Event
  - User action that take place while a world is playing
  - interrupts regular execution and demands to be responded to NOW
  - Concurrent commands – “race condition”
  - Alice worlds detect events and respond to them
  - For example:
    - when a user clicks an object with a mouse…it’s an EVENT!
    - when a user types a key on the keyboard…it’s an EVENT!
  - Events handling involves concurrency – doing two things simultaneously

Alice Events
- Process of responding to an event is called handling the event
- Tile for an event MUST appear in the Events Editor
- When world is first created, the event when the world starts appears in the Events Editor. This is how actions start normally.
Alice Events

- When the world starts
- While the world is running
- When a key is typed
- While a key is pressed
- When the mouse is clicked on something
- While the mouse is pressed on something
- When something is true
- When a variable changes
- Let the mouse move <object> - works for any object you click
- Let the arrow keys move <subject>
- Let the mouse move the camera – nice, but may be too limiting
- Let the mouse orient the camera

Specialized Events

General event must first be created
- Right-click and select changes to
- Parameters change an event to a specialized event

try: Create following events

- Camera moves with mouse
- When we press “J” an object jumps.
- Can make anything the mouse clicks on jump

Handling Key Press and Mouse Events

- Alice can detect when a key on the keyboard has been pressed
- Key Press Events (such as when a key is typed)
  - The event is triggered when the user types a key
  - Key that will trigger the event must be specified
  - any key is the placeholder until the “real” key is selected

Handling the “While condition” Event

- This tile has three different placeholder slots:
  - Begin
  - During
  - End
- Known as BDE (begin, during, end) event

Let’s do an event that has a loop

- You type “c” and the car moves towards the stop sign until it is close.
- Try it!
- Make sure moving forward will actually go towards the stop sign
world Events
When the world starts Do: world.my first method
While ( ( kangarooRobot distance to stopSign ) > 2 ) is true
Begin: kangarooRobot think Time to start moving
During: kangarooRobot move forward 0.5 meters
End: kangarooRobot think Whoa

BDE Event
Begin (one time)
– Specifies an action to take place before beginning
During (repeated)
– Specifies an action to take place during the event (multiple times until condition becomes false)
End (one time)
– Specifies an action to take place when the event stops occurring

Mouse Events / When the mouse is clicked…

When the mouse is clicked on something
Event is triggered when the mouse is clicked on an object in the world

Using Events in Simulations and Games
Programs can have numerous events
– They respond to various user interactions and internal events
– Your turtle program will have several events
– Note the various events that appear in Island Rescue

Events can contain
do together
do inorder

Tips for Games and Simulations
Random Numbers
– Function that returns a fractional number between 0 and 1
– Function can be added by altering the more editing tag
  • minimum: specifies a minimum value for the random number
  • maximum: specifies a minimum value for the random number
  • integerOnly: if the value is true, the function returns only whole numbers
Tips for Games and Simulations

Playing Audio
- Several classes include sounds
- Sounds appear in the class’s thumbnail in the gallery
- An object’s properties tab also allows for sound to be imported and played

Importing Sounds
- .wav or .mp3 sounds can be imported to an object

Recording Sounds
- With a mic attached to your computer, sounds can be recorded and then imported

Debugging with print
- Diagnostic messages are statements that are inserted into a program to display information that can be used in debugging a program that isn’t working properly
- Addition of the print instruction causes a menu to appear
- Menu shows all the objects that appear in the world