CompSci 18S
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Repetition

• In many kind of animations, especially simulation and games, some actions happen again and again
  – Example
    • Games where targets randomly appear and are caught or shot down, then appear elsewhere

• Actions are made to happen again and again by running an instruction or method more than once
More Complicated Loops

• It is possible to place a loop within another loop statement, this is **nested loops**

• Example: double ferris wheel
Demo - Ferris Wheel
nested loops
Review: What is a Variable?

- Property that can be changed using \textit{set}

Drag \textit{isShowing} tile into editor and select new value \textit{false}
Problem

• Given a cow that can randomly appear and disappear.
• Want to add a score to count the number of times user clicks on the cow.
• User gets specified amount of time to click (timer).
• Cow stops moving when time is up.
• User wins if a target number of clicks is achieved in the specified time. Cow tells user if they won or not.
• Start classwork now and I’ll show how to do the score
Solution

- Add a new 3D text object
  - will keep track of times cow clicked on
  - type in “score,” as the name of the 3D text object
  - Then change its text value to 0
Add Mutable Variables

• What does Score need to keep track of?
  – current value
  – final value
  – increment value

• Add three mutable class variables
Mutable Variables Added

• Three variables added
• Write method to initialize them
  - score.initialize
    - initialValue
    - finalValue
    - increment
• Call to initialize
Increment Counter

- Add an event to increment score's value when mouse is clicked on cow

- Need to write a method to increase the score value
  - both variable and text displaying score must be changed
First, change `score.value`

- Drag `value` over and set to `score.value`
- Use math to increase by increment
Second, display the new text value

- Each 3D text has a text value
- Drag this field and set
  
  $$\text{score} \set \text{set text to} \ (\text{default string})$$

- A *world* built-in function can be used to display the number *value* as a string
Almost Done…

• Add another 3D text to just say the word score
  – I named it scoreText
  – Then changed text value to “score”
• Add code to repeat until target is reached
• Cow appears at end
ClassWork

- Start with ClickACow.a2w
- Add a Score
- Add a Timer – similar to score
  - Start at high value (say 20)
  - Count down instead
- Game is over when Timer runs down
  - If Target score is reached – you win