Note: thanks to Wanda Dann and Steve Cooper for slide ideas
Announcements

• Evaluation
• Read Chapter 7, Sec 2 for next time
• Registration time – CPS 6
  – CPS 4 prepares you to take CPS 6
  – For CPS 6 need to know - Objects, methods, conditionals (if), repetition (loop), list or arrays (we will do)
  – Will review these topics in CPS 6 with Java
• Assignment 6 due tonight!
• Assignment 7 out! Due Nov. 8!
What we will do today

• Lecture on Chap 7, Sec 1
  – Definite Loops

• Classwork
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
Example

• Bunny sneaks into garden and wants to eat broccoli. Bunny needs to hop several times over to broccoli.
Bunny.hop

- Makes bunny hop up and down, making a sound and traveling .8 meters total
- See code in book
- How do we get bunny to hop many times over to the broccoli?
One solution

- What is the problem with this solution?
Counted Loop

• A counted loop is an alternative way to write repetitive code
• Repeats instructions a counted number of times
Demo - Code to hop 6 times

- The loop instruction executes a definite number of times, specified by a count
- Using a loop instruction
  - Saves time
  - Is convenient, easy to change the count
  - Can use a function in place of the count (must return a number)
Let’s Modify this animation

• Want the bunny to hop over to the closest broccoli and eat it
• Then hop to the next closest broccoli and eat it
• Move broccoli so not all together
• Only do with 3 broccoli
  – easy to expand to more broccoli
First write whichBrocClosest

// returns the broccoli that is closest to the bunny
Write method bunny.eatBroccoli

• Make bunny turn to face closest broccoli
• Then hop over to it stopping in front of it
• Then eat the broccoli
  – Make it invisible and move it far away
Infinity times....

• If “infinity times” is selected for a loop, loop will run until the program is shut down
Example

- What happens if we make the other bunny hop up and down infinity times?
How do we fix this?

• How do we get both bunnies to move, one infinitely and one definitely?

• NOTE: Be Very Careful when using infinite loop! If something goes forever, it doesn’t stop!
More Complicated Loops

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

• Example in book: double ferris wheel
Demo - Ferris Wheel
nested loops
Modify bunny.eatBroccoli

• For each of the broccoli do
  – Make bunny turn to face closest broccoli
  – Then hop over to it stopping in front of it
  – Then eat the broccoli
  – Then make broccoli invisible and move far away
Classwork today

- Copy file fishGameSetup
- Write two methods and counters