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

- 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

Write method bunny.eatBroccoli
Infinity times....

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

| 1 time   |
| 2 times  |
| 5 times  |
| 10 times |
| infinity times |

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