CompSci 4
Chap 7 Sec 1
Oct 25, 2005

Prof. Susan Rodger

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

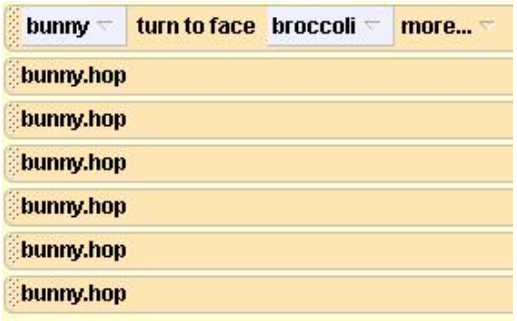
Example

- 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?

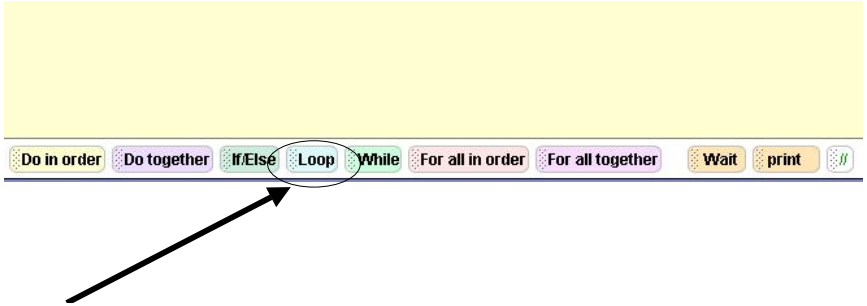
One solution



- 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



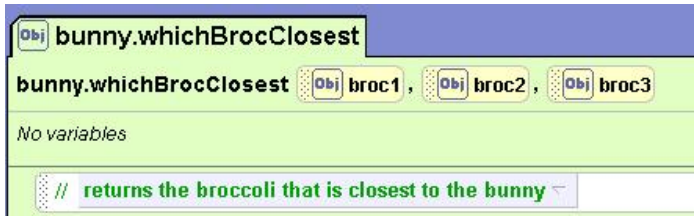
Demo - Code to hop 6 times

- 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



Write method bunny.eatBroccoli

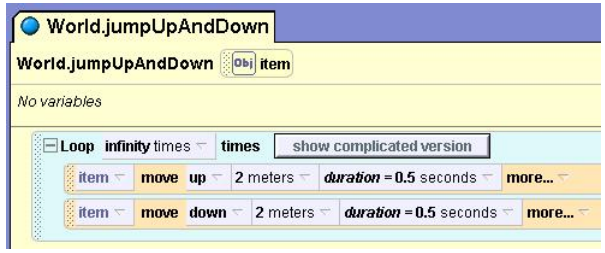
- Make bunny turn to face closest broccoli
- Then hop over to it stopping in front of it
- Then eat the broccoli
  - Make it invisible and move it far away

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?

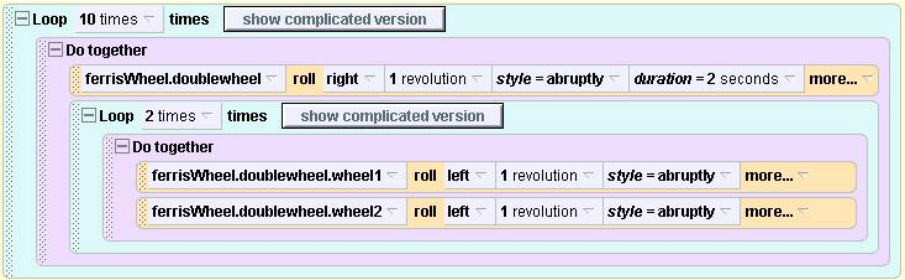
- How do we get both bunnies to move, one infinitely and one definitely?

- 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