CompSci 94
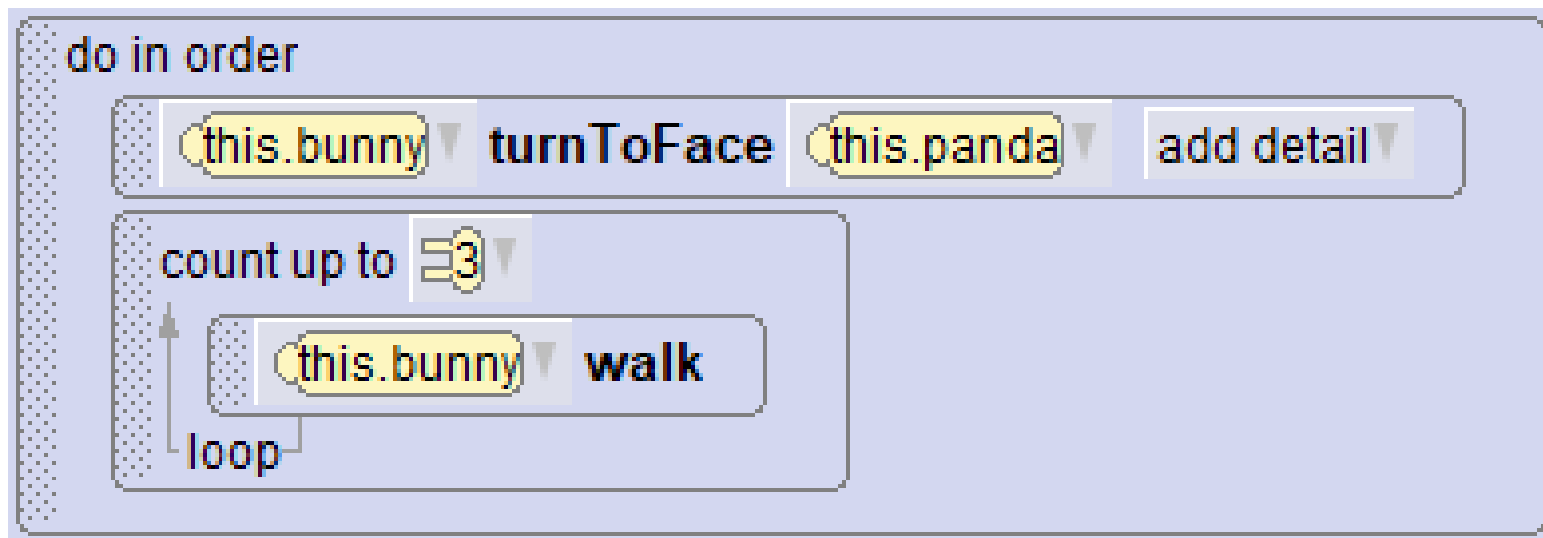# Undetermined Repetition with While loop
October 10, 2024

Prof. Susan Rodger

Announcements

- Enjoy Fall Break!
- QZ13 and videos for Thursday, Oct 17

- Assignment 4 out next time

- Exam 2 is October 24
  - Study materials put on 10/24 date

# Looping – exact number of times

• Count loop

• How many steps to get to the panda?

  – 3, 6, 8?

Repetition

- Sometimes don't know exactly how many times a set of instructions are repeated.

- Stopping is based on a condition

- Example:
  - Game of Chess, how many moves until win
  - Stop: when markers are in check mate position

- Indefinite Repetition
  - Where number of repetitions not known in advance
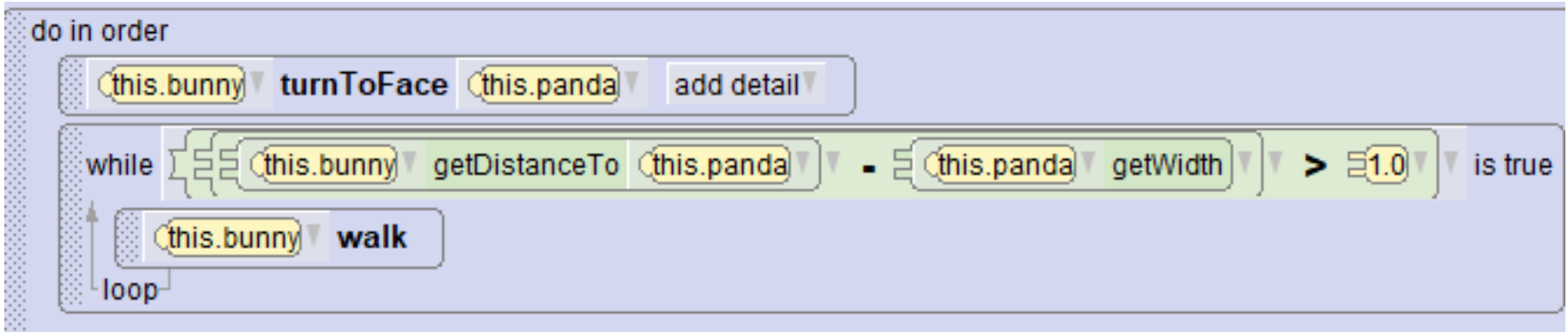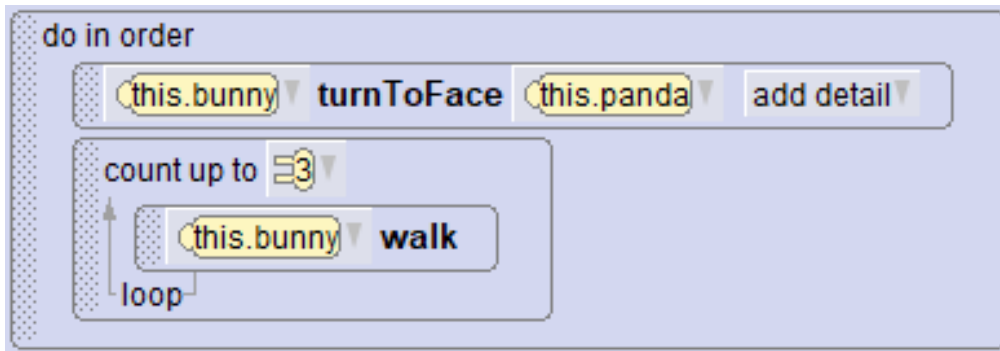 - Use **while** statement

While statement
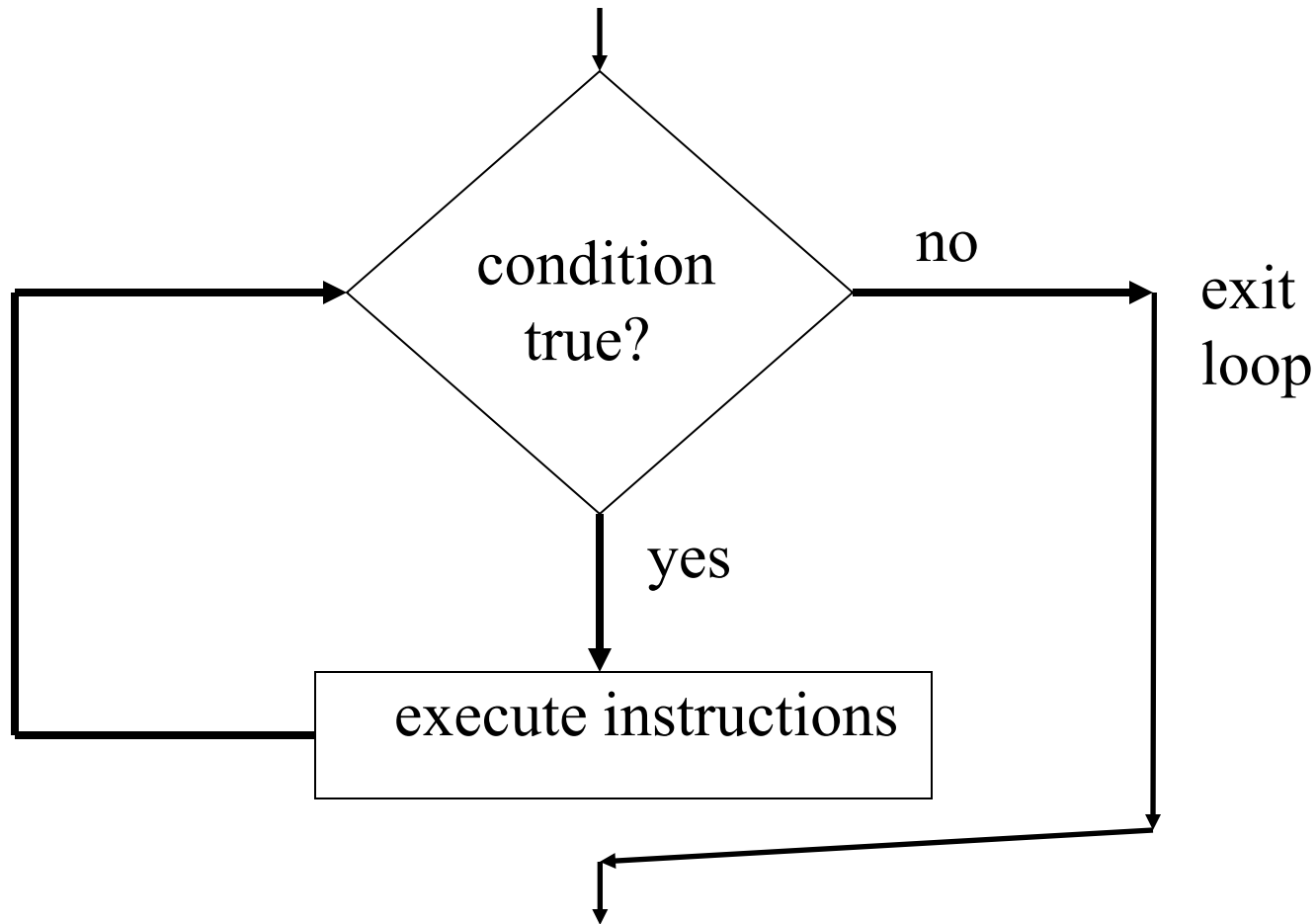
- While some condition is true
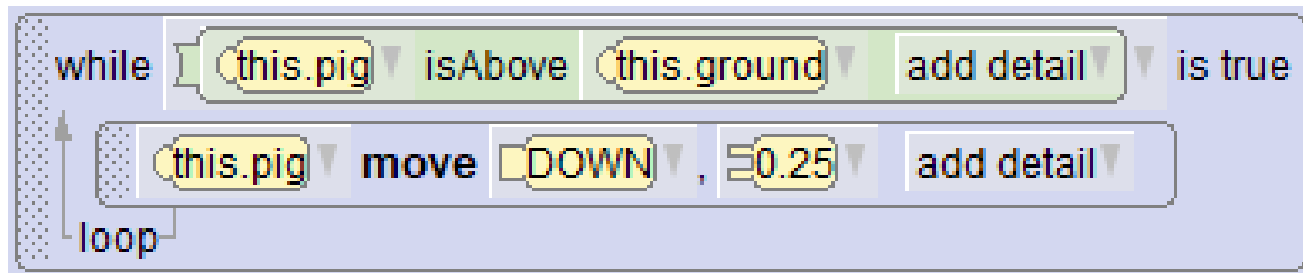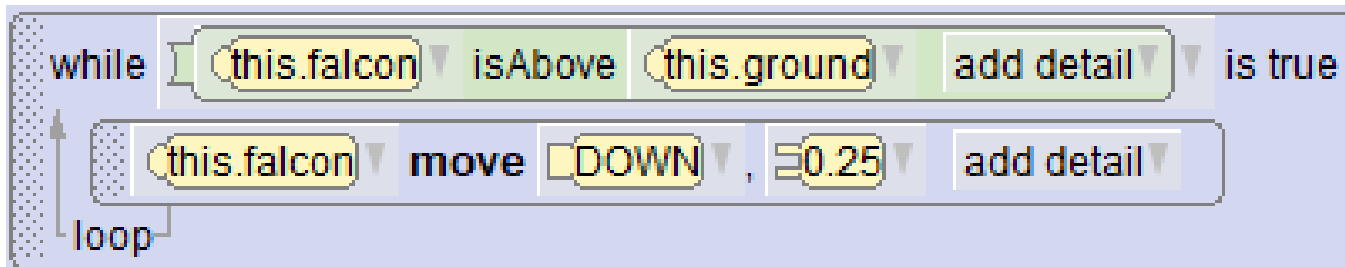 - execute instructions

General "Rule of Thumb"

- As a general rule, a While loop should be written so the loop will eventually end
  - Requires statements inside the loop change the conditions of the world such that condition for While eventually becomes false

- If While loop never ends
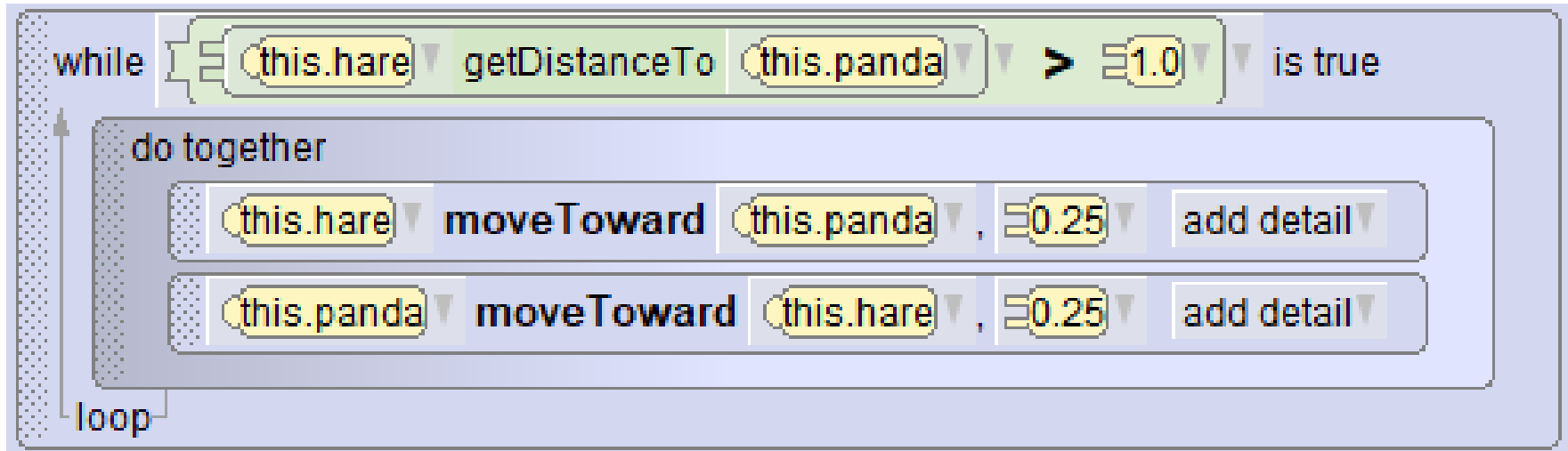 - Infinite while loop

Q1 Compare – What is difference?

Q2. What happens when run?


```
while ⌷ (this.falcon▾  isAbove  (this.ground▾   add detail▾ ▾  is true
  ▲ ⌷ (this.falcon▾  move ☐DOWN▾ , ⊟0.25▾   add detail▾
  loop
```

```
while ⌷ (this.pig▾  isAbove  (this.ground▾   add detail▾ ▾  is true
  ▲ ⌷ (this.pig▾  move ☐DOWN▾ , ⊟0.25▾   add detail▾
  loop
```

Q3 What happens, when does the loop stop?


```
while  ⊏≡ (this.hare ▾  getDistanceTo (this.panda ▾ ▾  >  ≡1.0 ▾ ▾  is true
  do together
    (this.hare ▾  moveToward (this.panda ▾ , ≡0.25 ▾  add detail ▾
    (this.panda ▾  moveToward (this.hare ▾ , ≡0.25 ▾  add detail ▾
loop
```

Q4 What happens, when does the loop stop? (numbers different)


```
while ⊐⊟ (this.hare▽ getDistanceTo (this.panda▽▽ > ⊟1.0▽▽ is true
  do together
    (this.hare▽ moveToward (this.panda▽ , ⊟3.0▽  add detail▽
    (this.panda▽ moveToward (this.hare▽ , ⊟3.0▽  add detail▽
loop
```
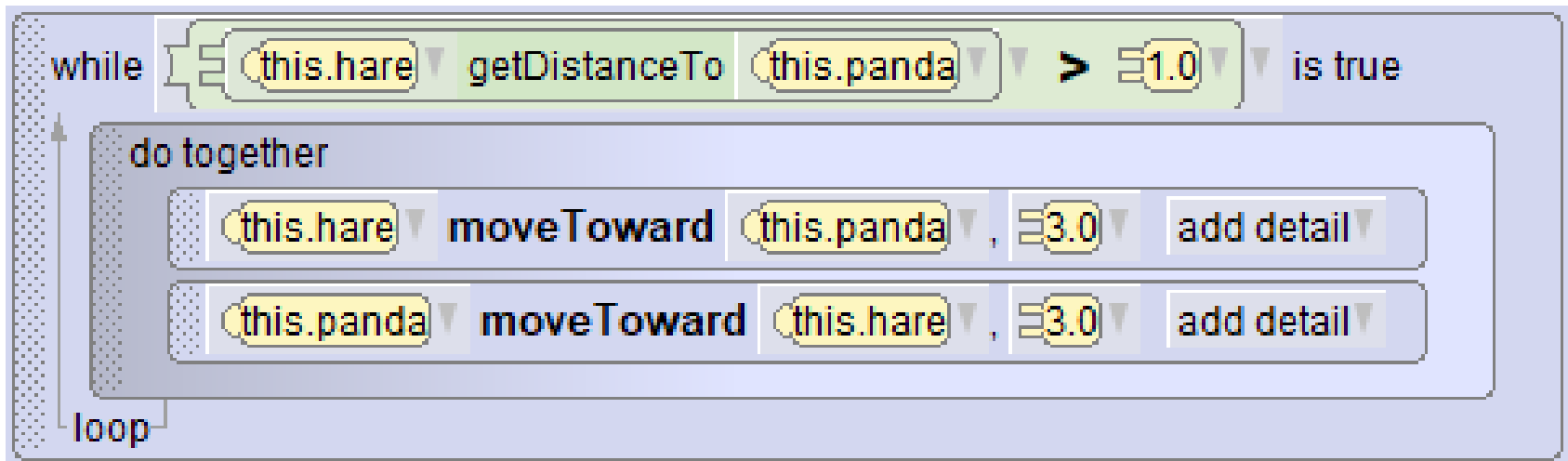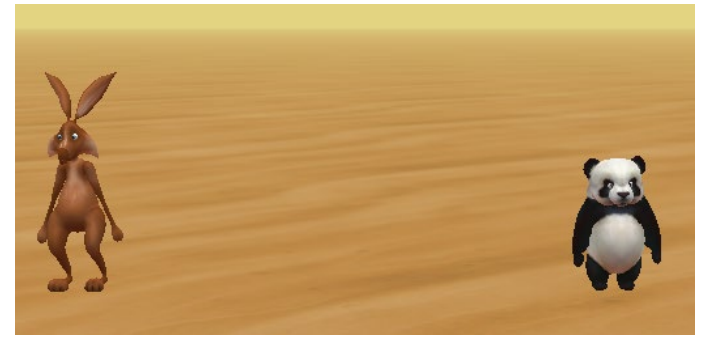
Q5 What happens when this runs?
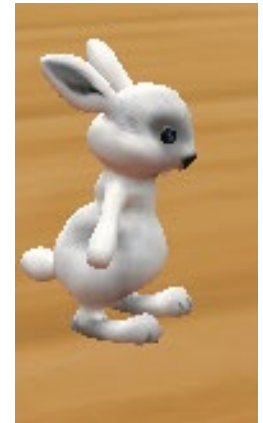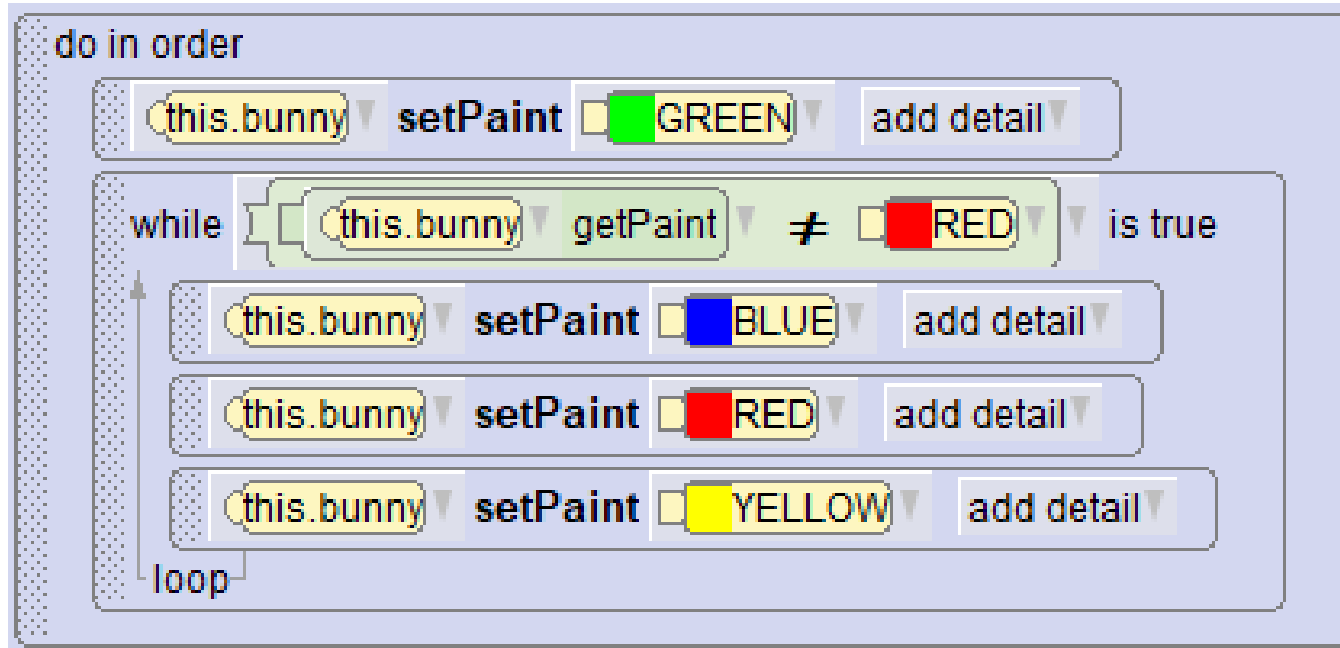
Q6 What code could I use to stop this loop?

do in order
  // How do I stop this loop? What do I put in place of true?
  while ☐true ▽ is true
    this.bunny ▽ **resize** ☐1.3 ▽ add detail ▽
  loop
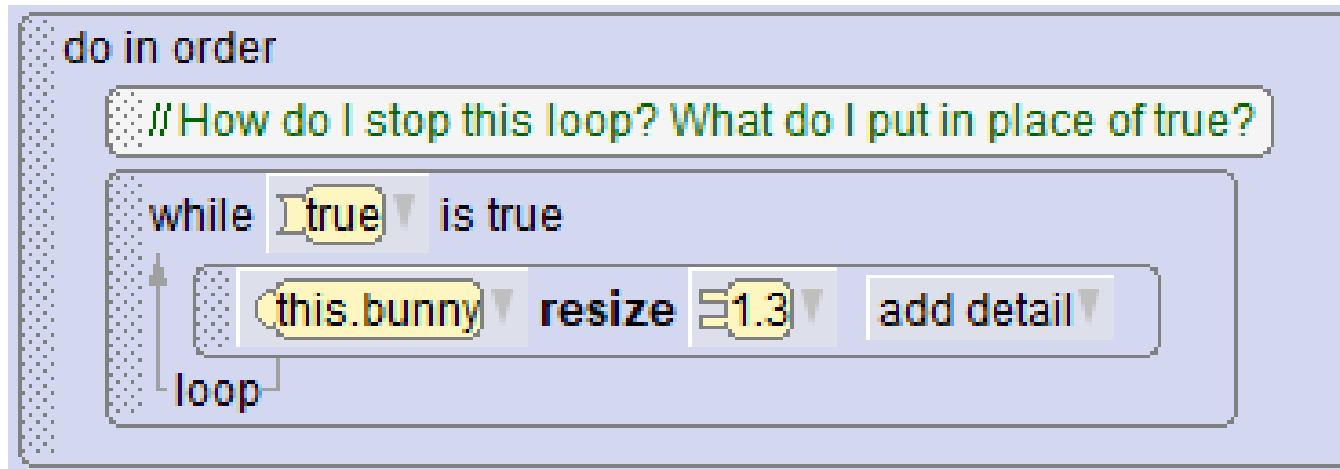
Class Today

- Catching dinner