CompSci 94
Undetermined Repetition with While loop
October 14, 2021
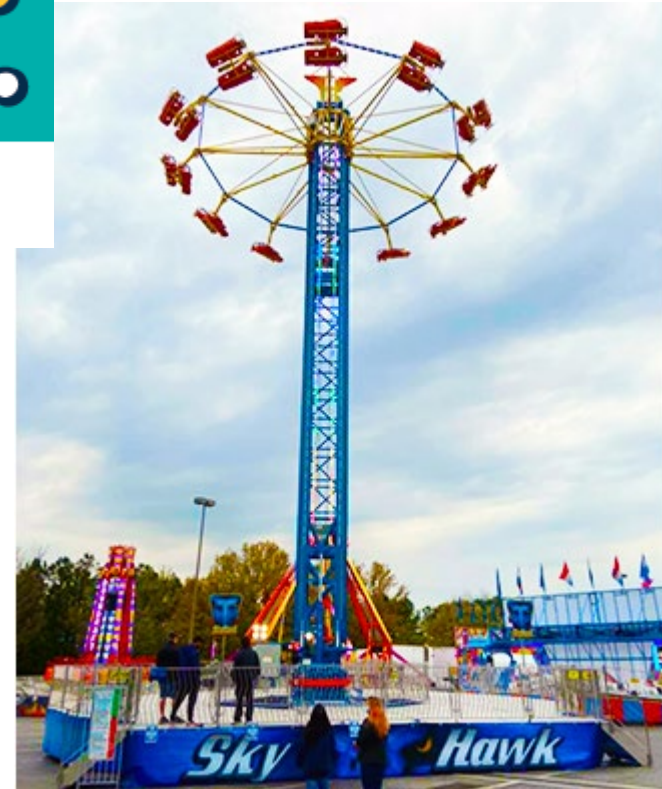
Prof. Susan Rodger

Announcements

- QZ and videos for next time
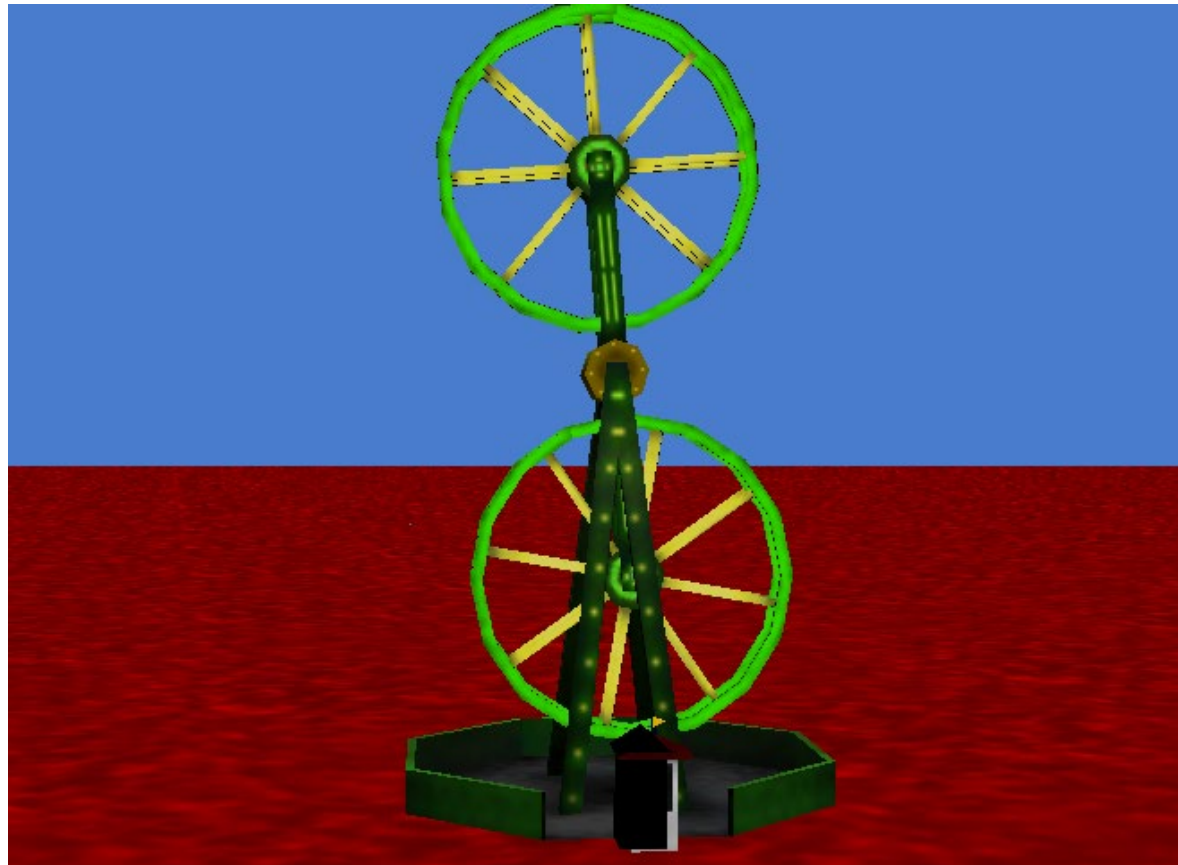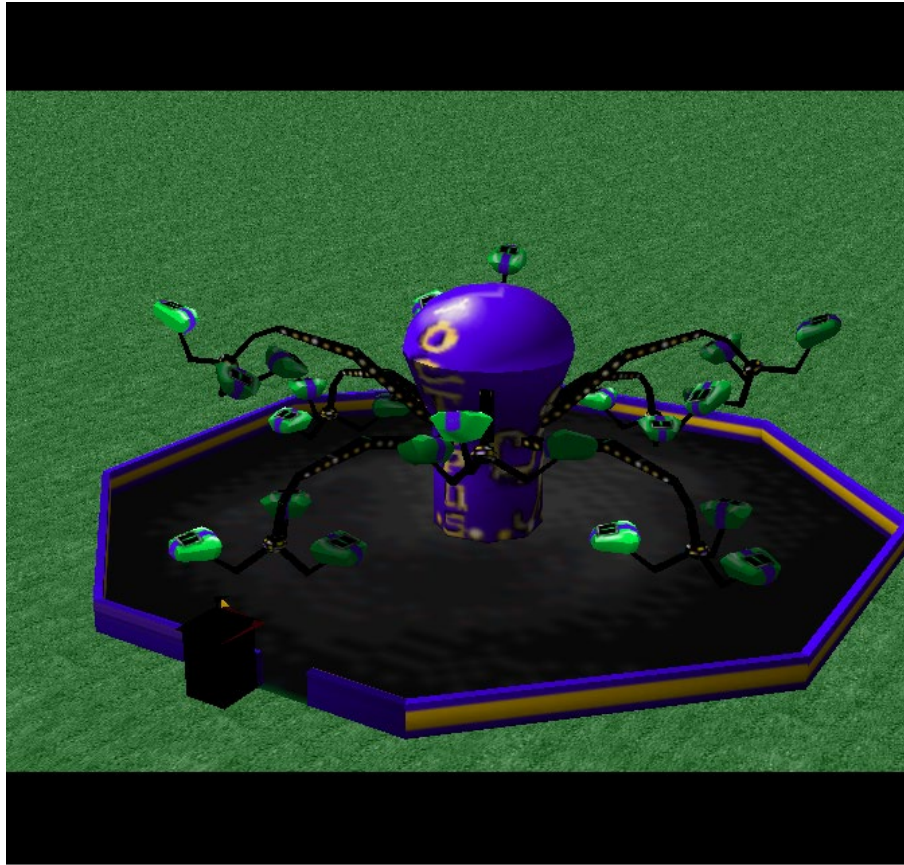
At the Raleigh Fair Grounds

Alice 2 Fair Rides as objects Double FerrisWheel

Alice 2 - Octopus Ride

Looping – exact number of times

- Count loop

```
do in order
    this.bunny   turnToFace   this.panda   add detail
    count up to  3
        this.bunny   walk
    loop
```
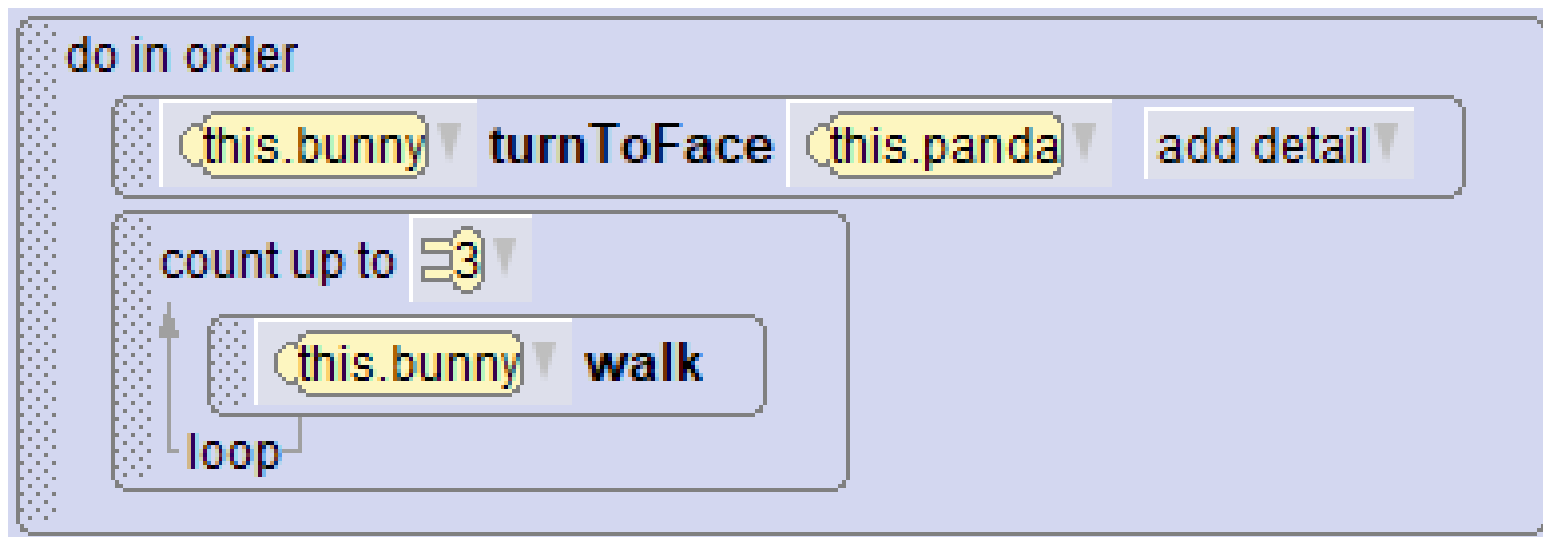
- How many steps to get to the panda?
3, 6, 8?

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
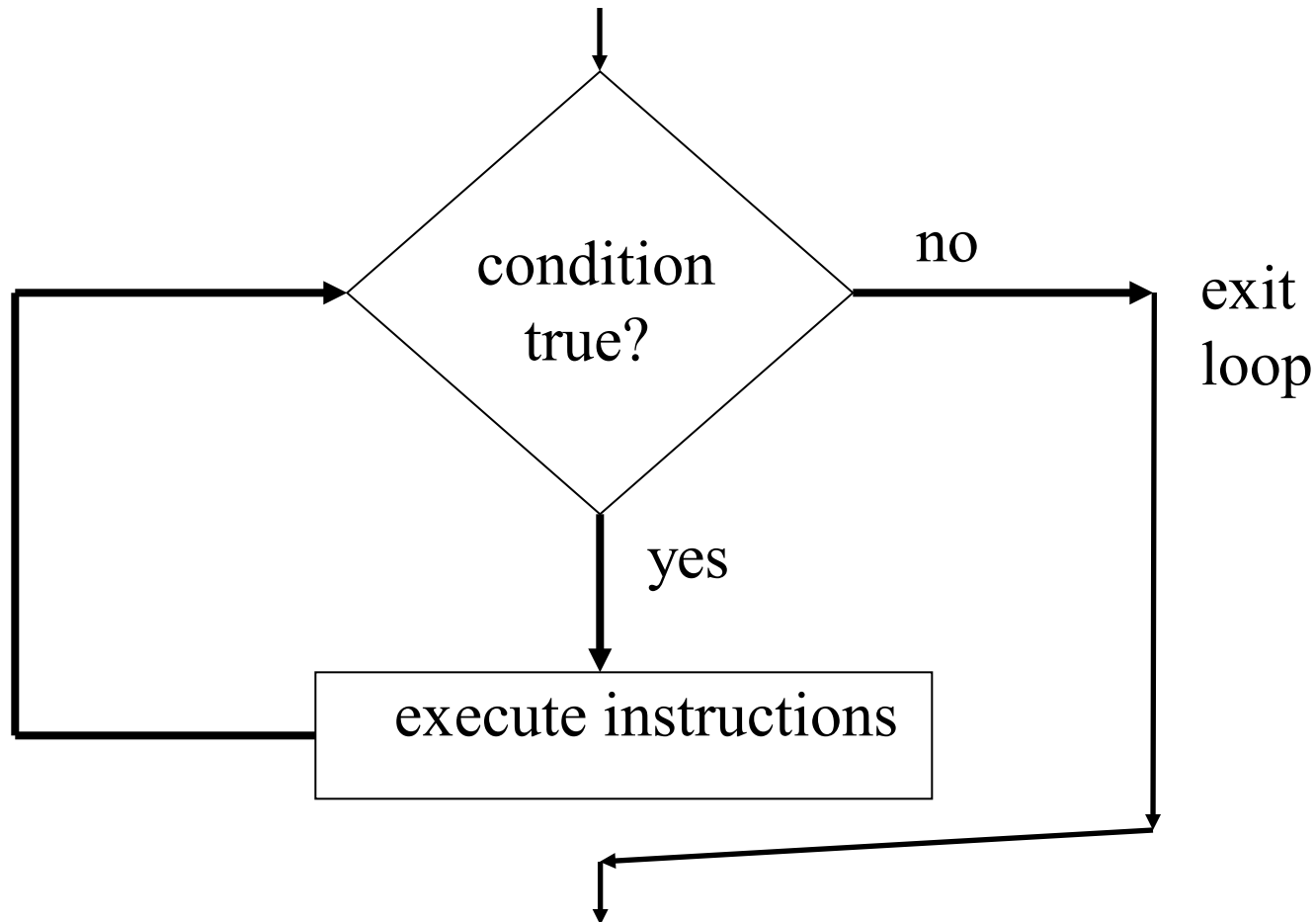
- While some condition is true
  - execute instructions

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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
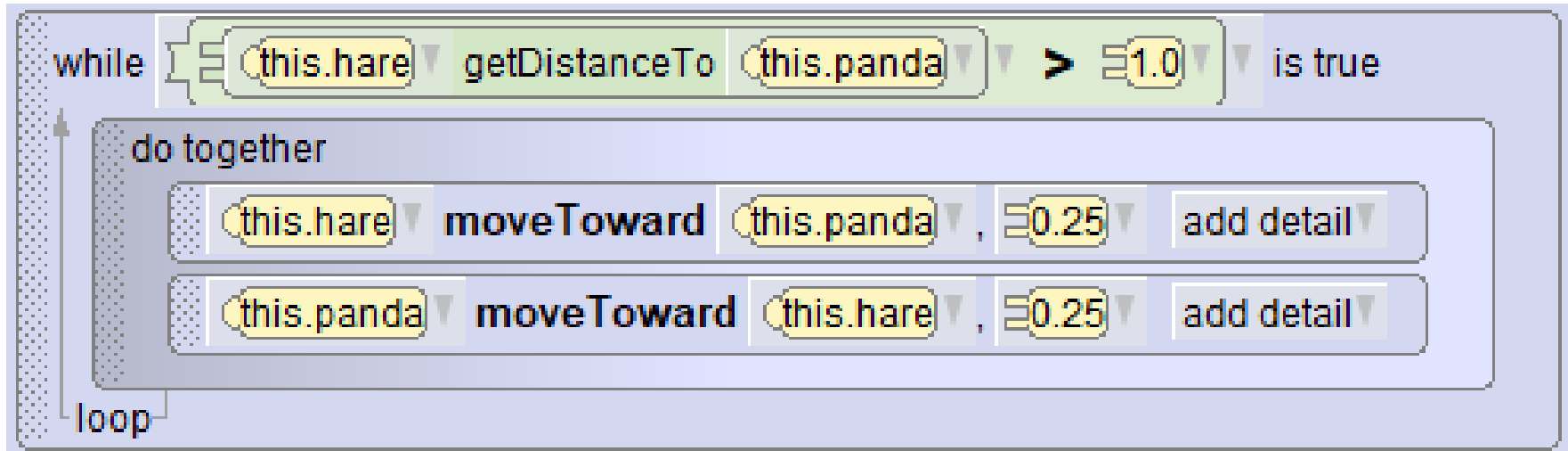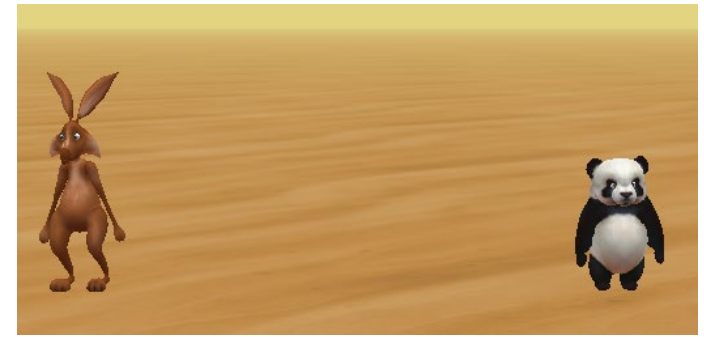
Q1 Compare – What is difference?
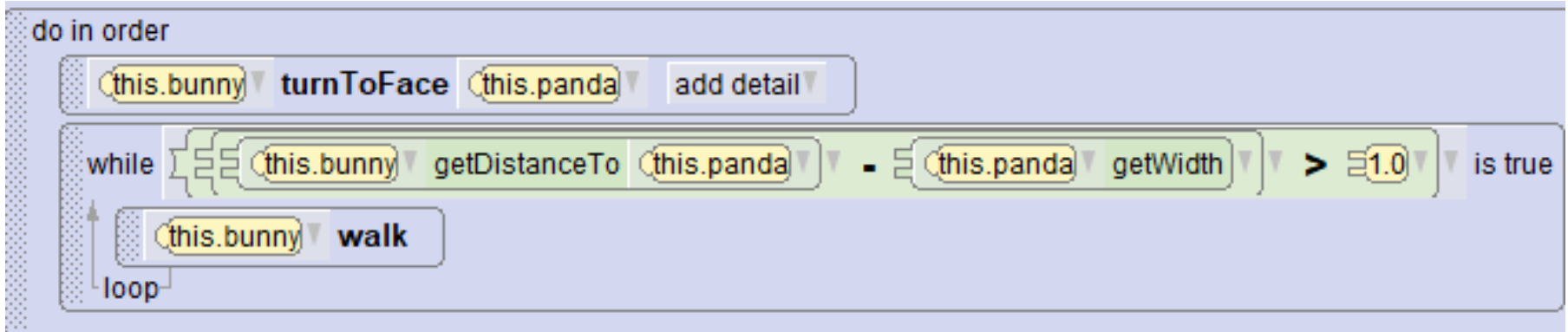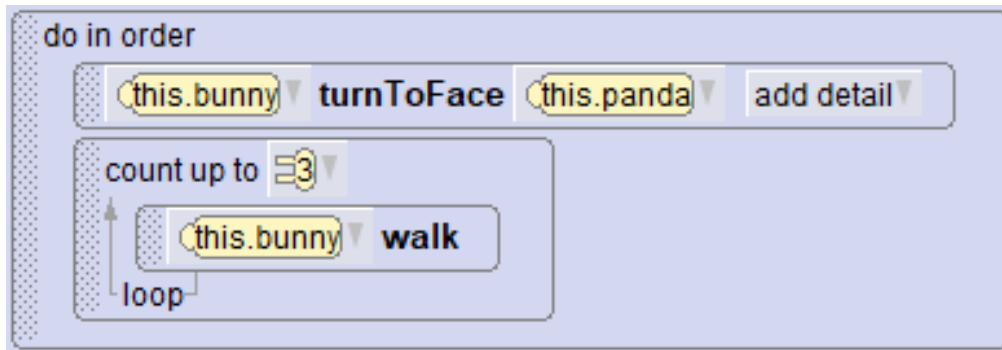
Q2. What happens when run?

```
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
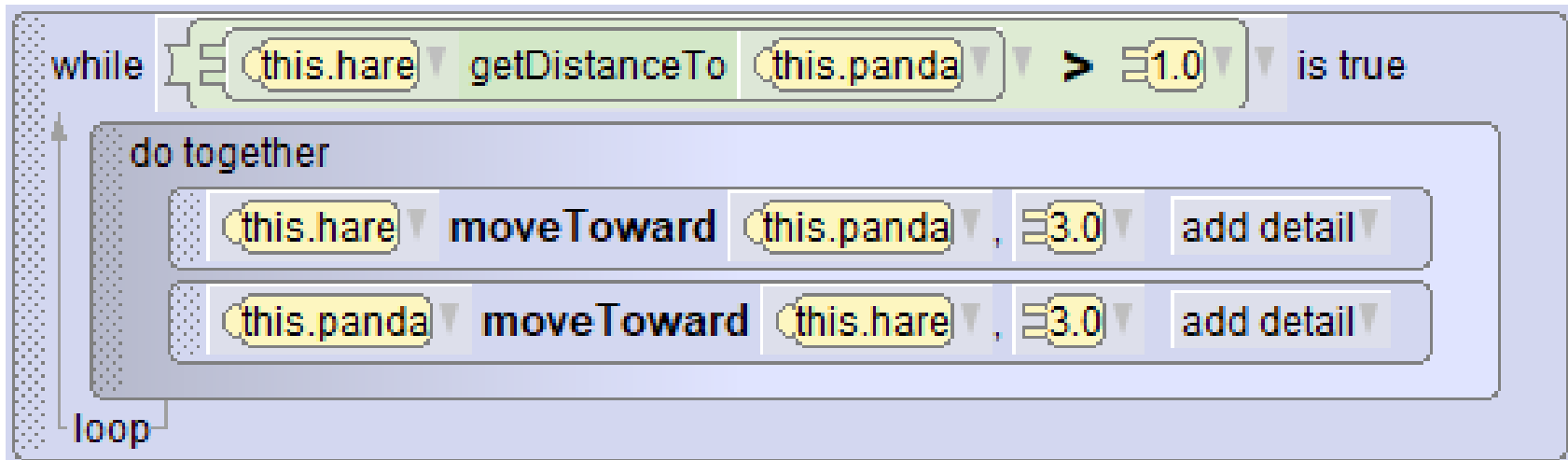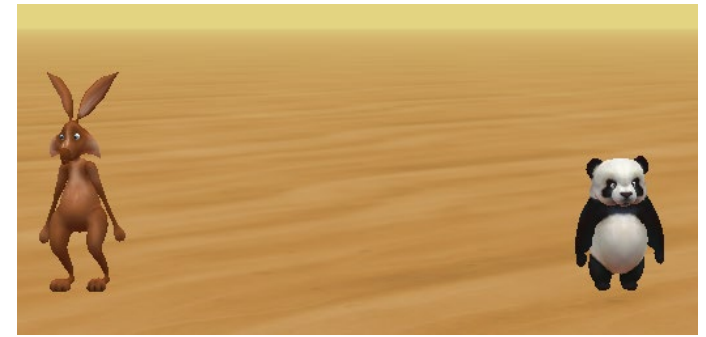
Q5 What happens when this runs?
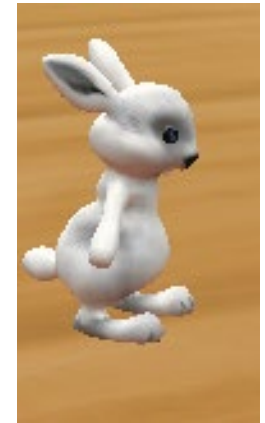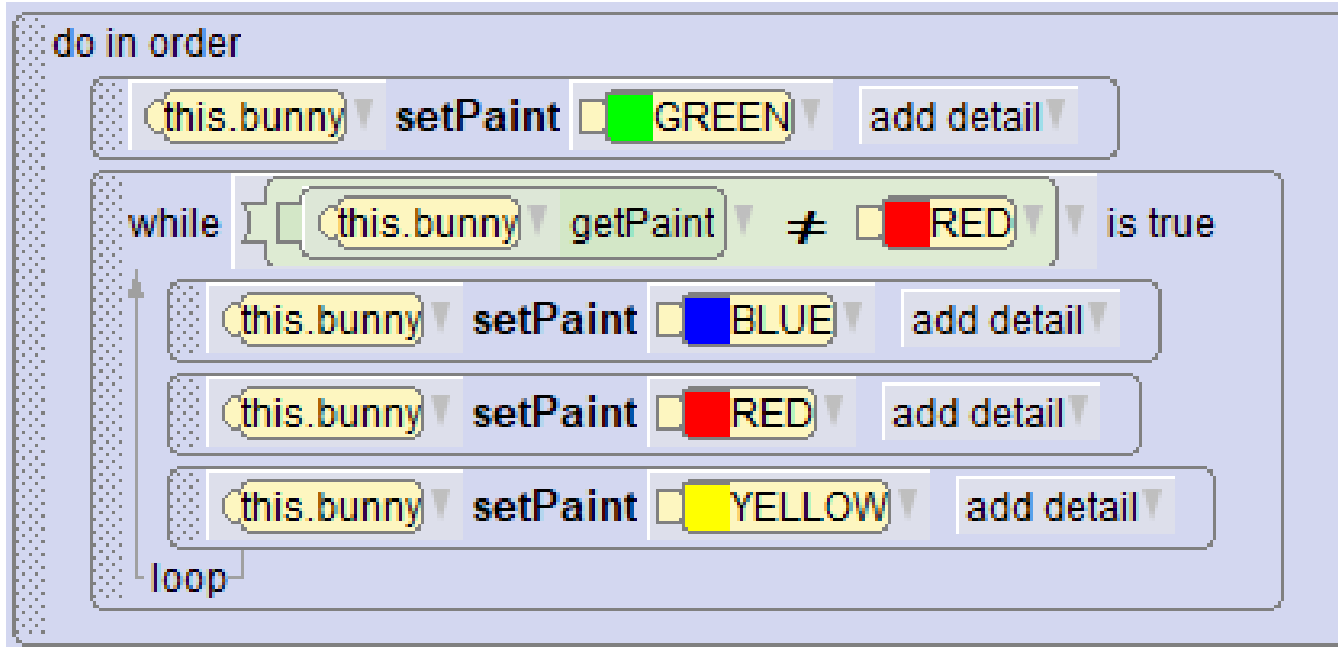
Q6 What code could I use to stop this loop?
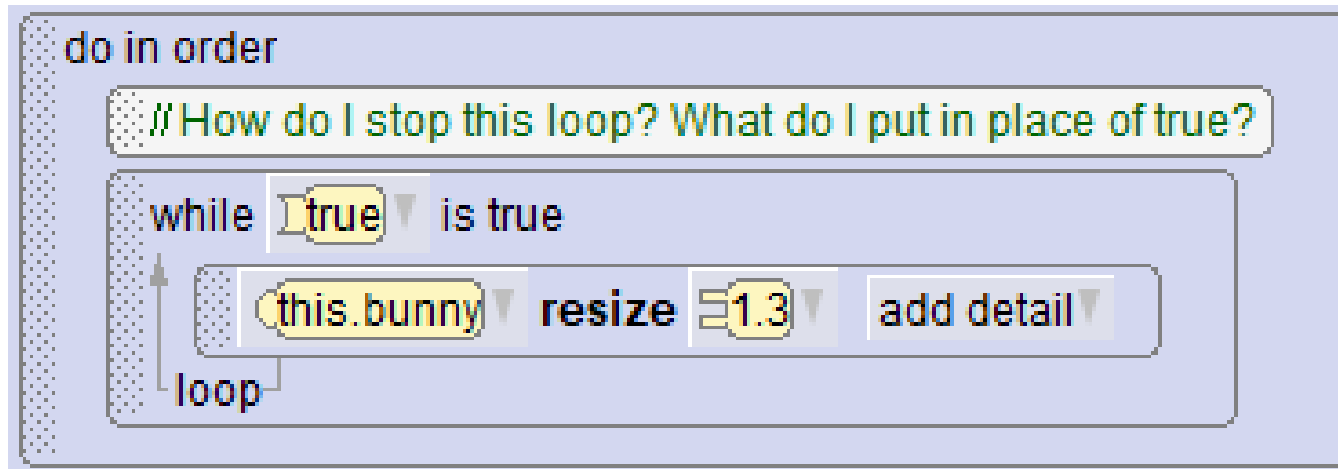
Class Today

- Catching dinner