

CompSci 94

Undetermined Repetition with While loop

October 10, 2024



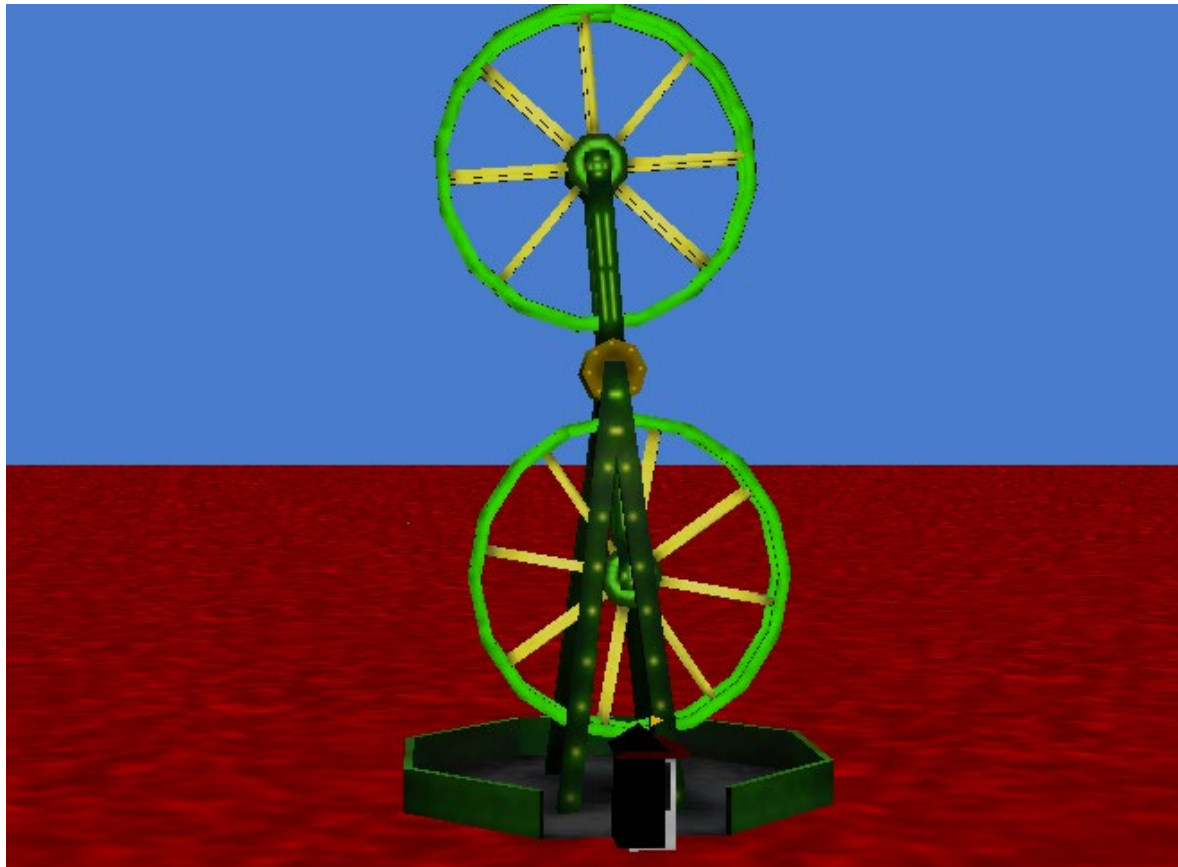
Prof. Susan Rodger

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

Alice 2 Fair Rides as objects

Double Ferris Wheel



Double Ferris Wheel



Loop 10 times times show complicat...

ferrisWheel.doublewheel.wheel2 roll left 0.1 revolutions more...

Wait 2 seconds

ferrisWheel.doublewheel roll left 0.5 revolutions more...

Loop 10 times times show complicat...

ferrisWheel.doublewheel.wheel1 roll left 0.1 revolutions more...

Wait 2 seconds

Loop 10 times times show complicat...

Do together

ferrisWheel.doublewheel roll right 1 revolution style = abruptly duration = 2 seconds more...

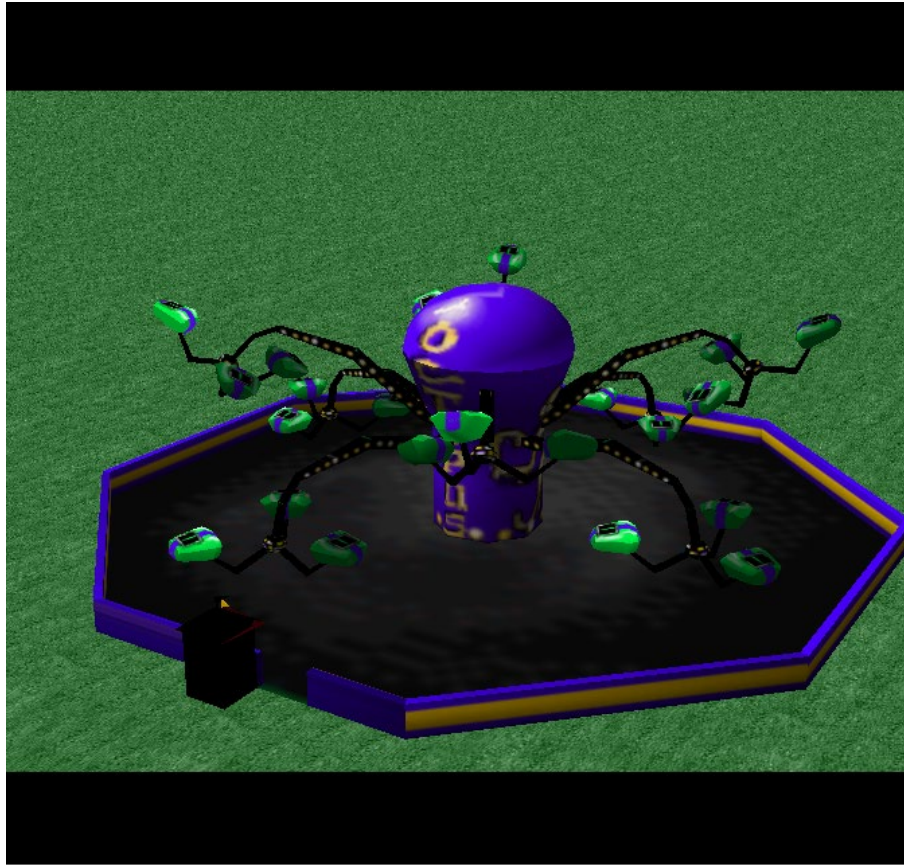
Loop 2 times times show complicat...

Do together

ferrisWheel.doublewheel.wheel1 roll left 1 revolution style = abruptly more...

ferrisWheel.doublewheel.wheel2 roll left 1 revolution style = abruptly more...

Alice 2 - Octopus Ride



Alice 2 Octopus Ride



world.my first method

Octopus.octopusAnimation

world.my first method *No parameters*

create new parameter

No variables

create new variable

// Ride the Octopus

// Don Slater June 19, 2008

// <None>

// See Octopus animation from above

Octopus.octopusAnimation

// Move camera to one of the pods facing forward

camera set point of view to Octopus.Center.Arm3.pods more...

camera set vehicle to Octopus.Center.Arm3.pods more...

// get in the pod

camera move up .2 meters more...

camera move forward (subject = Octopus.Center.Arm3.pods 's width / 2) more...

// Sit in the pod

Do together

camera turn left 0.25 revolutions more...

camera move backward 0.5 meters more...

camera turn forward 0.05 revolutions more...

// Ride the Octopus Pod

Octopus.octopusAnimation

world.my first method

Octopus.octopusAnimation

Octopus.octopusAnimation No parameters

create new parameter

No variables

create new variable

Loop 1 time time show complicat...

Wait 2 seconds

Do together

Loop 6 times times show complicat...

Do together

Octopus.podsAnimation pods = Octopus.Center.Arm1.pods

Octopus.podsAnimation pods = Octopus.Center.Arm2.pods

Octopus.podsAnimation pods = Octopus.Center.Arm3.pods

Octopus.podsAnimation pods = Octopus.Center.Arm4.pods

Octopus.podsAnimation pods = Octopus.Center.Arm5.pods

Octopus.podsAnimation pods = Octopus.Center.Arm6.pods

Octopus.podsAnimation pods = Octopus.Center.Arm7.pods

Octopus.podsAnimation pods = Octopus.Center.Arm8.pods

Loop 3 times times show complicat...

Do together

Octopus.armsAnimation armUp = Octopus.Center.Arm1 armDown = Octopus.Center.Arm2

Octopus.armsAnimation armUp = Octopus.Center.Arm3 armDown = Octopus.Center.Arm4

Octopus.armsAnimation armUp = Octopus.Center.Arm5 armDown = Octopus.Center.Arm6

Octopus.armsAnimation armUp = Octopus.Center.Arm7 armDown = Octopus.Center.Arm8

Octopus.baseAnimation

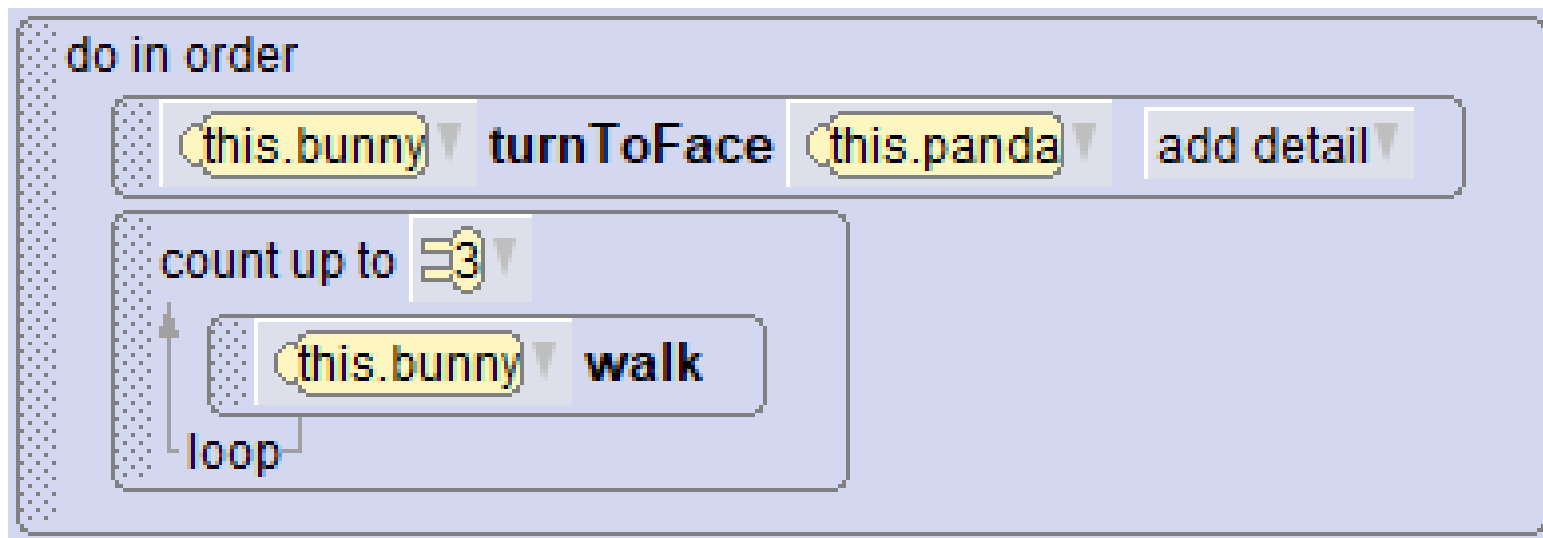
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Back to Alice 3....

Looping – exact number of times

- Count loop

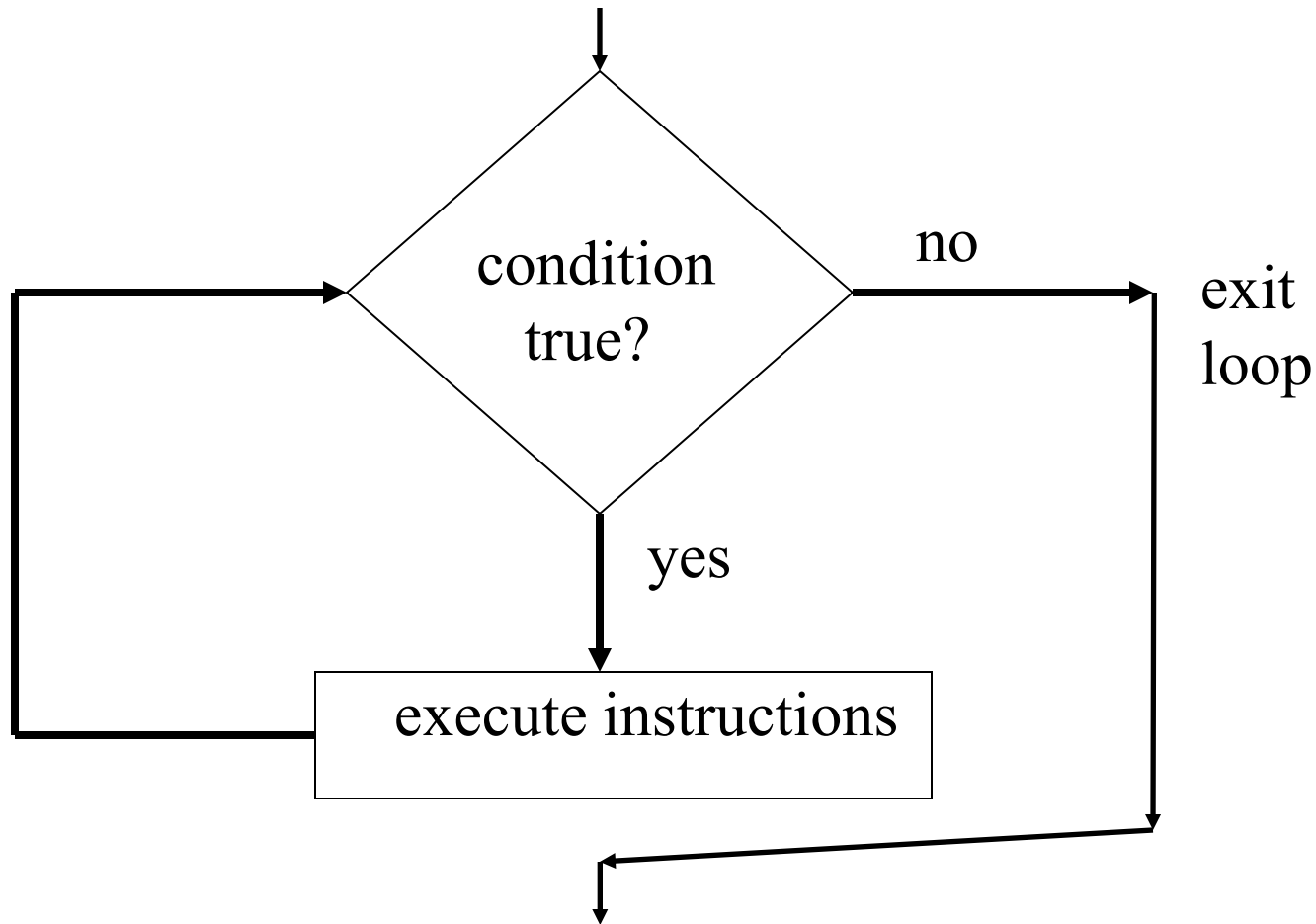


- How many steps to get to the panda?
 - 3, 6, 8?

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

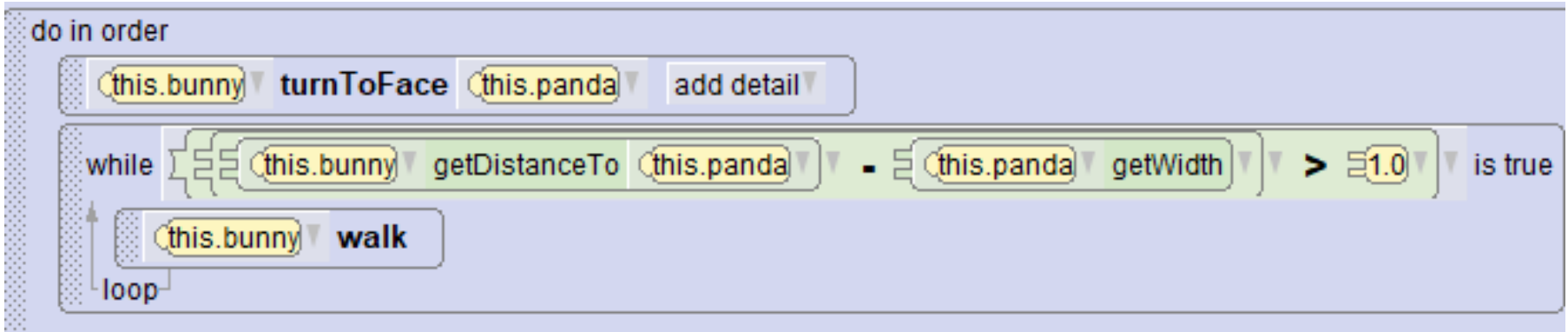
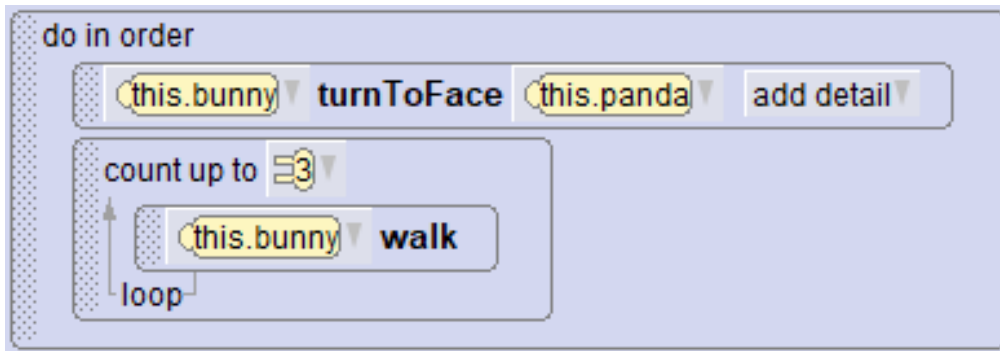


- While some condition is true
 - execute instructions

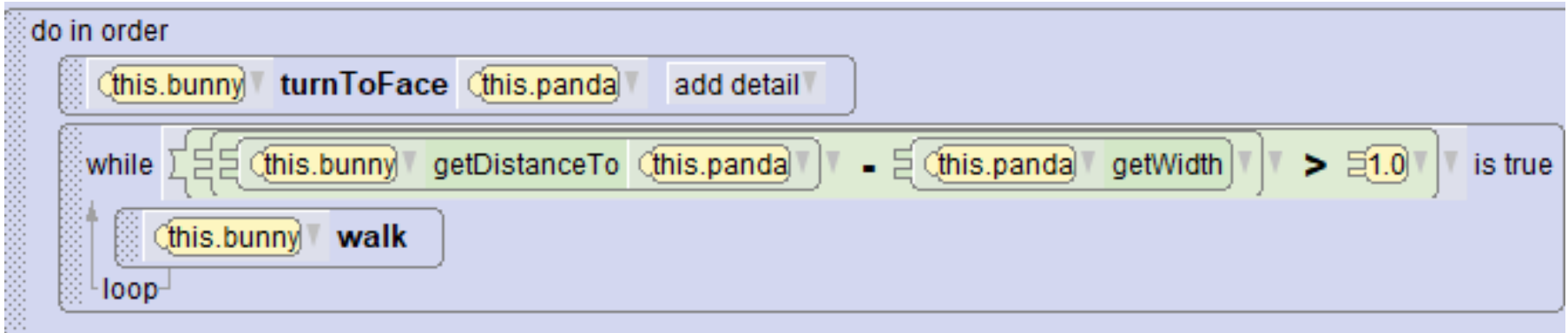
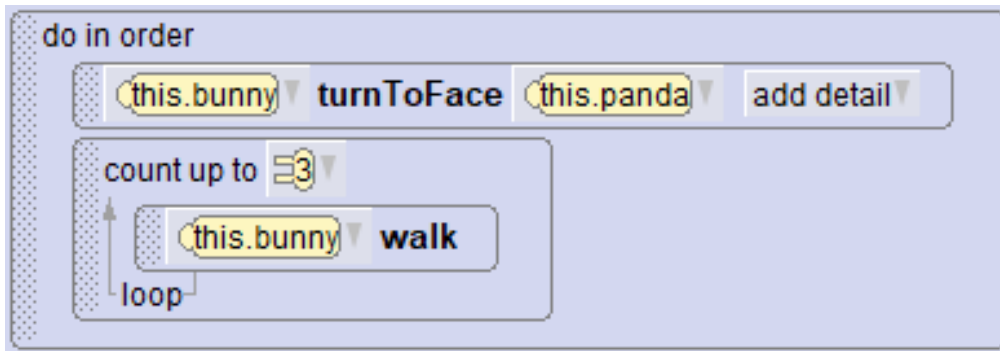
General “Rule of Thumb”

- 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?

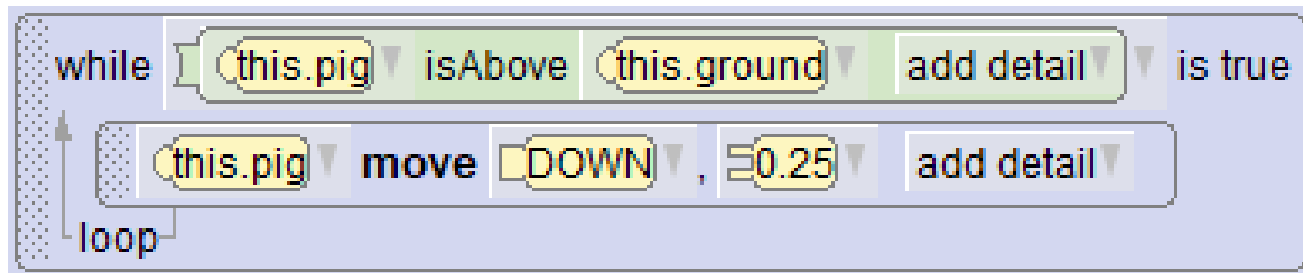
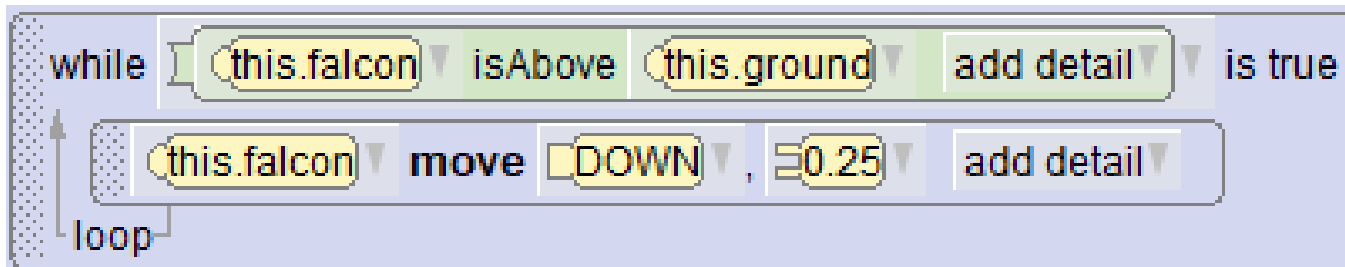


Q1 Compare – What is difference?

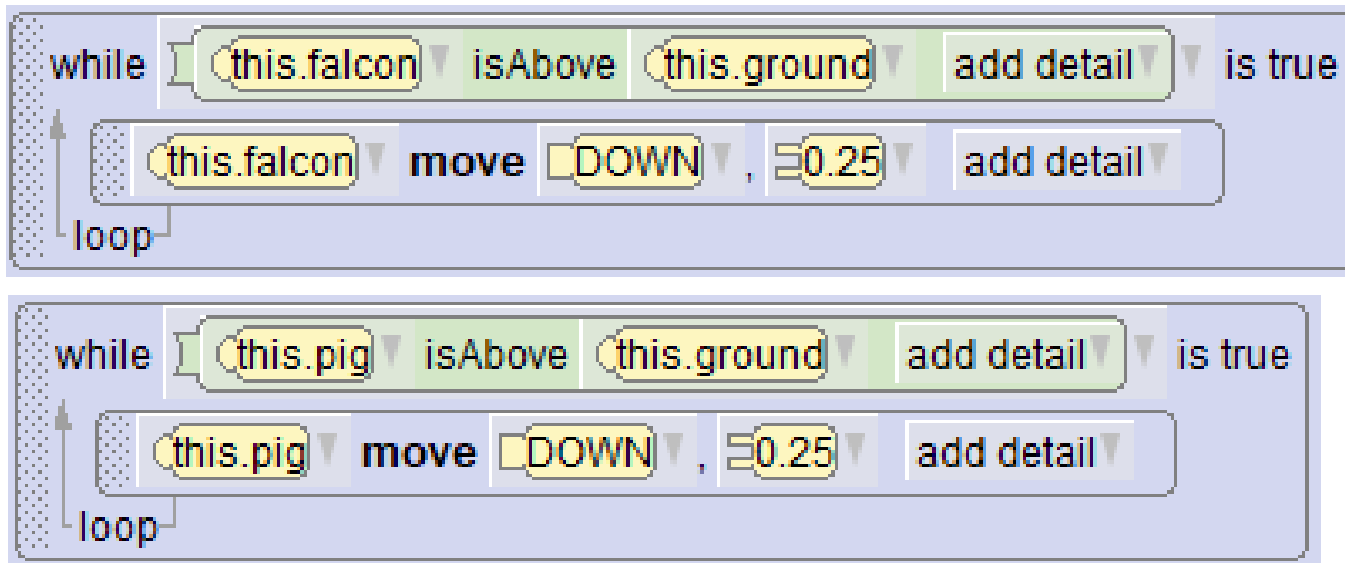


- While loop stops when bunny is close to panda
- Count loop bunny just walks three times

Q2. What happens when run?

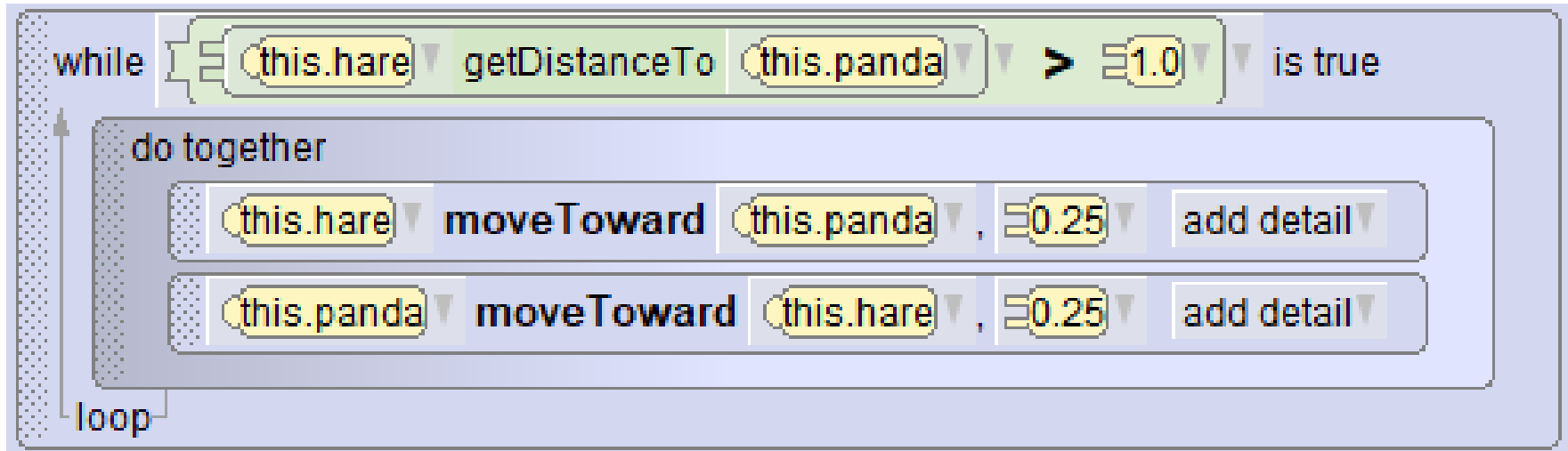


Q2. What happens when run?

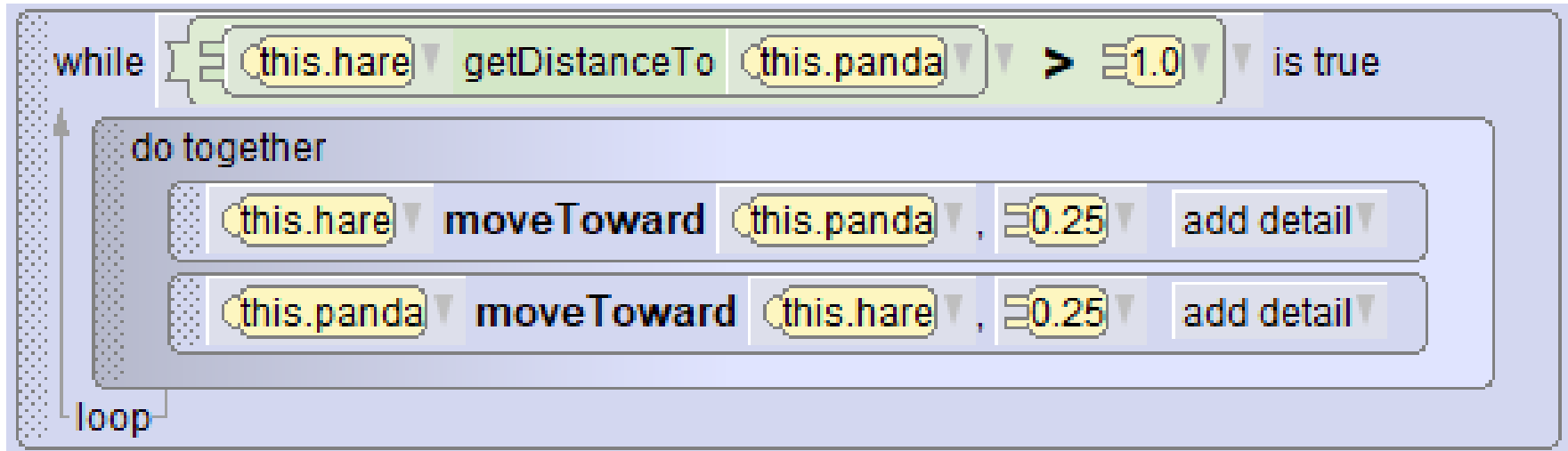
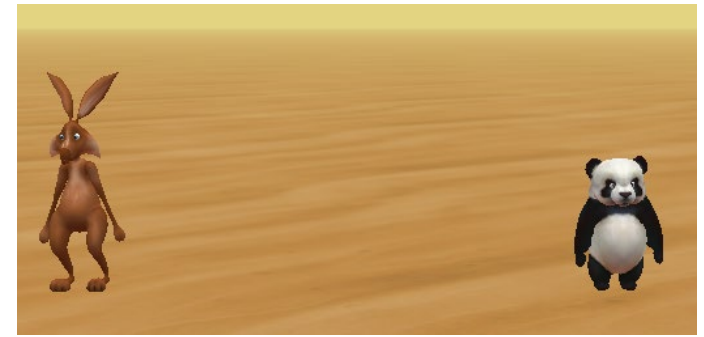


- First loop, falcon moves down until partially in the ground
- Second loop, nothing happens since the condition is never true. The pig is not above ground.

Q3 What happens, when does the loop stop?

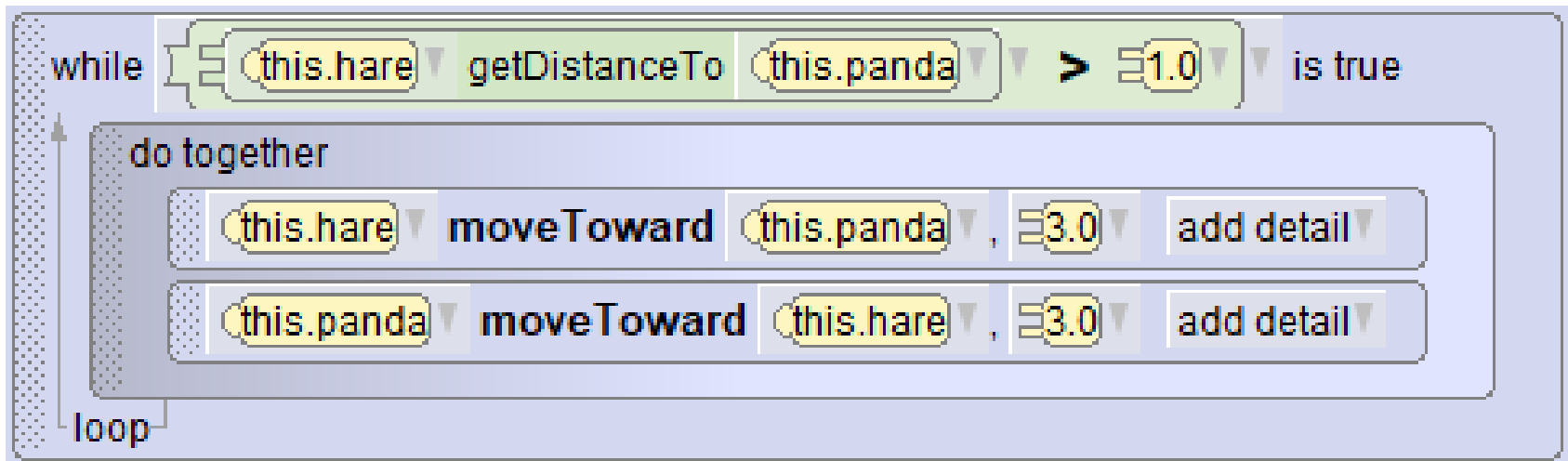


Q3 What happens, when does the loop stop?

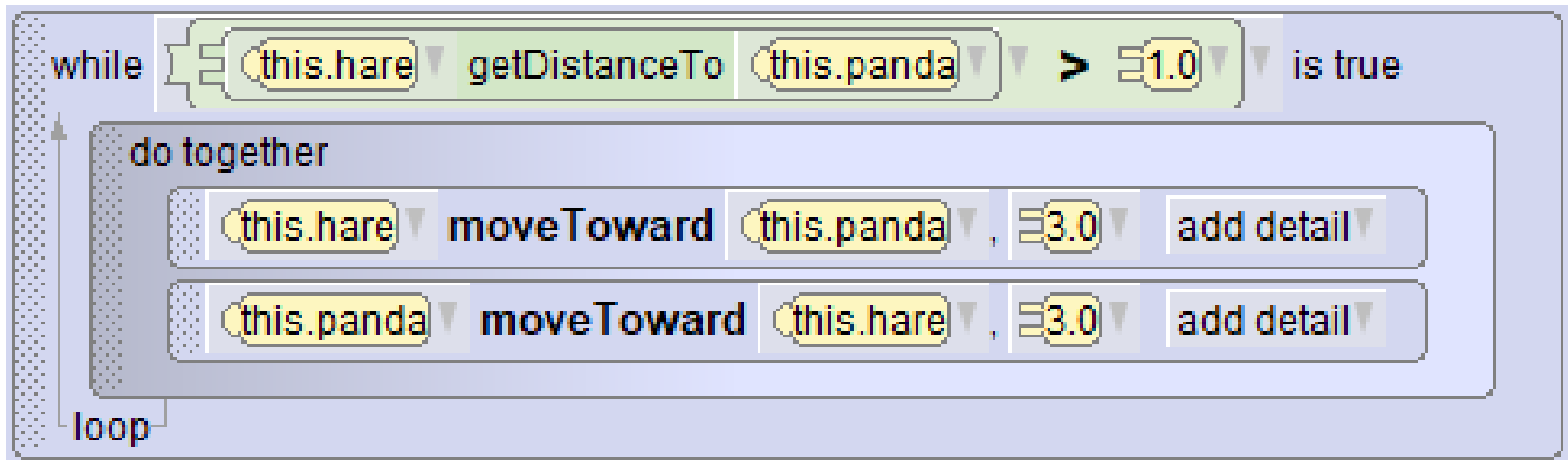
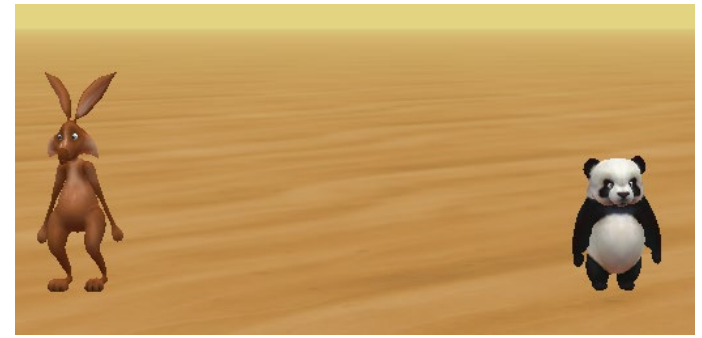


- They move towards each other repeatedly until their distance is less than or equal to 1.0

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

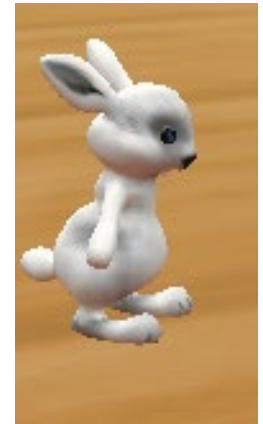
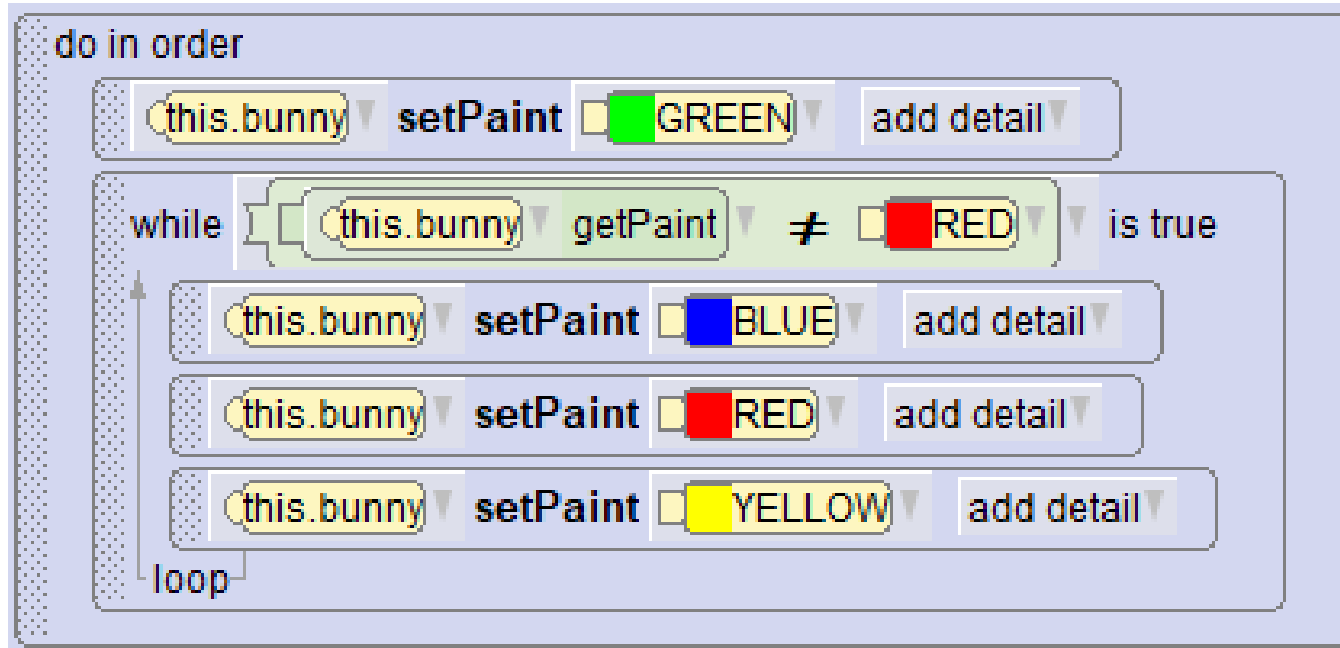


Q4 What happens, when
does the loop stop?
(numbers different)

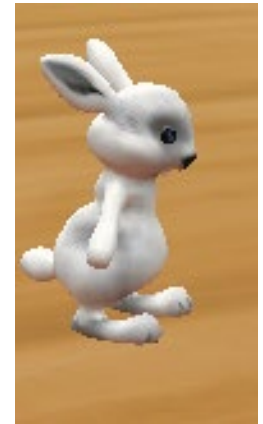
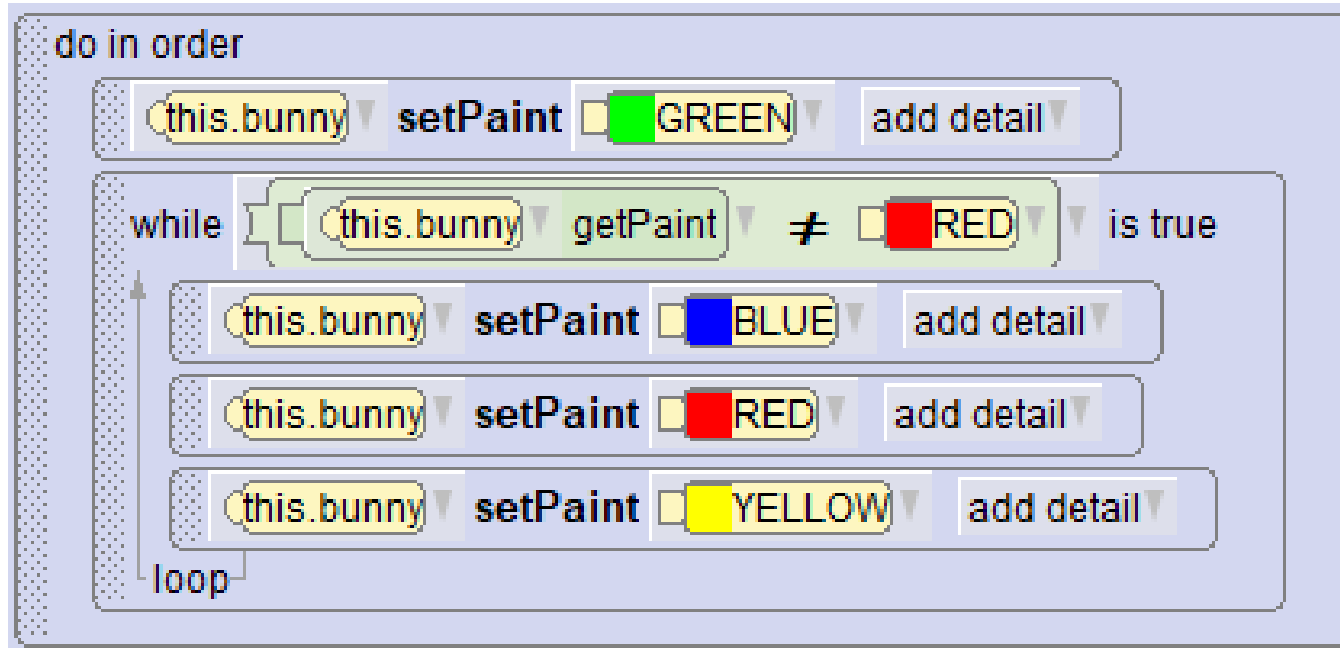


- They move way too much compared to how close they are suppose to be. This could be an infinite loop!

Q5 What happens when this runs?

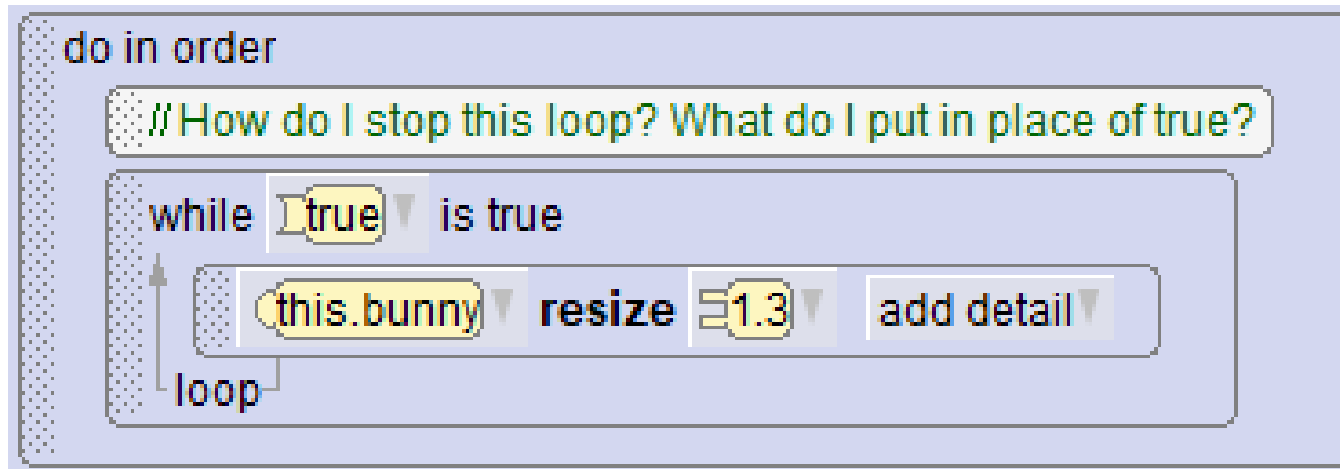


Q5 What happens when this runs?

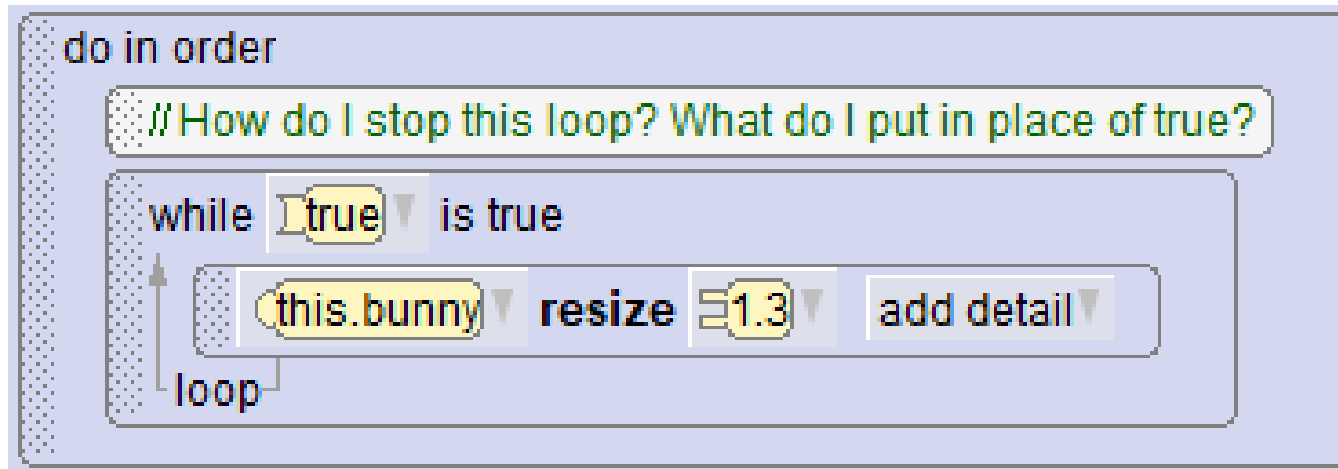


- This is an infinite loop! The bunny is never red when the condition is tested. So the condition is always true!

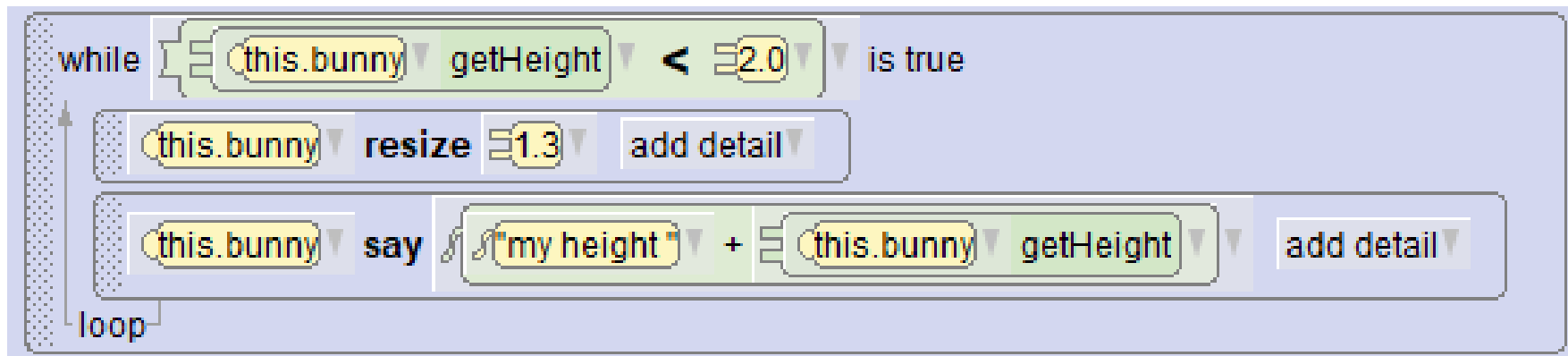
Q6 What code could I use to stop this loop?



Q6 What code could I use to stop this loop?



- Continue while height smaller than some number. Stop when height is bigger.



Class Today

- Catching dinner

