

CompSci 94

Undetermined Repetition with While loop

October 20, 2022



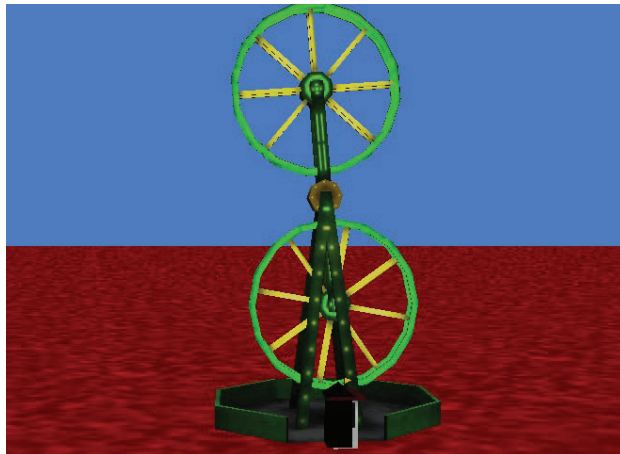
Prof. Susan Rodger

Announcements

- QZ13 and videos for next time
- Assignment 4 out next time
- Exam 2 is November 1

Alice 2 Fair Rides as objects

Double FerrisWheel



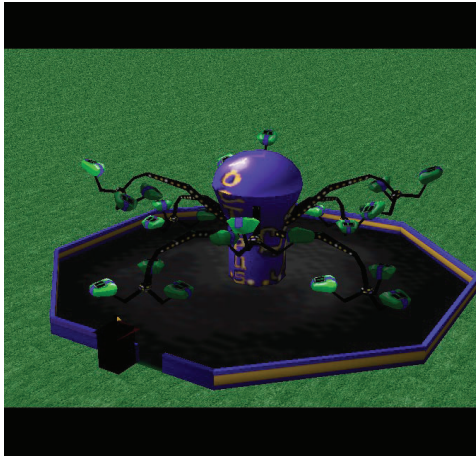
```
Loop 10 times times show complicat...
  ferrisWheel.doublewheel.wheel2 roll left 0.1 revolutions more...
  Wait 2 seconds

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



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```

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
    
```

10/20/22 Octopus.baseAnimation

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Back to Alice 3...

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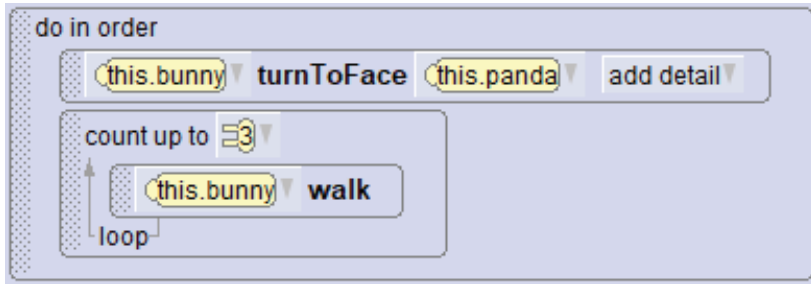
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Looping – exact number of times



- Count loop



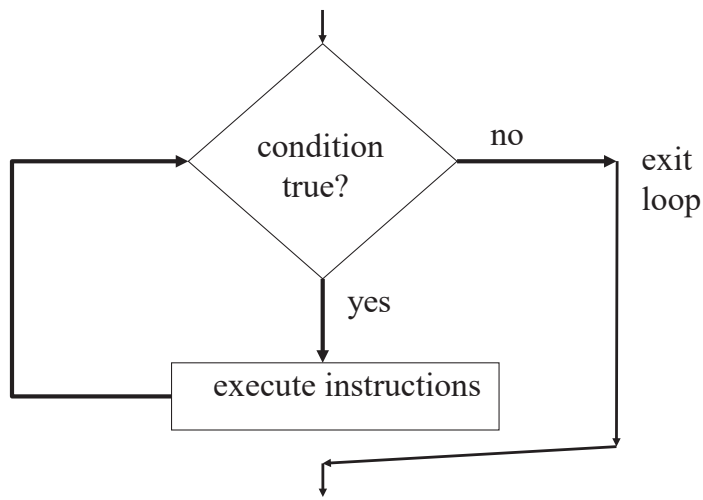
- How many steps to get to the panda?

10/20/22 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?

```
do in order
  this.bunny turnToFace this.panda add detail
  count up to 3
  loop
    this.bunny walk

do in order
  this.bunny turnToFace this.panda add detail
  while this.bunny getDistanceTo this.panda - this.panda getWidth > 1.0 is true
  loop
    this.bunny walk
```

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?

```
do in order
  this.bunny setPaint GREEN add detail
while this.bunny getPaint ≠ RED is true
  this.bunny setPaint BLUE add detail
  this.bunny setPaint RED add detail
  this.bunny setPaint YELLOW add detail
loop
```



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

