CompSci 94
Undetermined Repetition with While loop
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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

- 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 checkmate position

• Indefinite Repetition
  – Where number of repetitions not known in advance
  – Use **while** statement
While statement

- While some condition is true
  - execute instructions

```
while condition is true:
    execute instructions
    # loop

no

yes

condition true?

exit loop
```
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?

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

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

- They move towards each other repeatedly until their distance is less than 1.0
Q4 What happens, when does the loop stop? (numbers different)
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?

```java
// How do I stop this loop? What do I put in place of true?
while (true) { // This is the infinite loop
    this.bunny.resize = 1.3
    add detail
}
```
Class Today

• Catching dinner