Class Today

• Group elements together in an array
• Elements perform action one at a time
• Elements perform action all together
• Calculating the smallest in an array
Setup for Lecture today

• Put in four objects, all must be Bipeds:
  – Biped: teenPerson, bunny, cheshireCat, Hare
The Story

• Our group of four will do the following.
  – **One at a time** they turn all the way around and then kick their right leg up and down.
  – **All together** they turn all the way around and kick their right leg up and down in synch.
  – **One at a time** they each say how tall they are.
  – **The tallest person** says they are the tallest.
  – Change the sizes and again **the tallest person** should say they are the tallest.
Array for grouping items together

- Each element in the array is in a particular slot number.

<table>
<thead>
<tr>
<th>teenPerson</th>
<th>bunny</th>
<th>cheshireCat</th>
<th>hare</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

- Note size of array is 4, elements are in positions 0 to 3
Create a variable of type array (in myFirstMethod)

• Be sure to check the box that it is an array variable, which means you can store multiple values in it.

• Type is Biped, you can store lots of Bipeds in it.

• Give the variable a name – I gave it `club`

• Click on Custom Array and add in the four Bipeds

• (see next slide)
Biped variable named club
One at a time, turn and kick leg

• One way but lots of code!

• Need six more lines for cheshireCat and hare

• What if we had 10 creatures?
Better way – use “for each in”

• Apply commands to each item in an array
How to use – for each in

• for each Biped crew in club
  – Crew is a variable to represent each item one at a time in the array club
Play it, they turn and kick one at a time
Turn and kick together

• Use “for each together”

• Create a new variable for this loop, I named mine **crew2**

• Have each one turn and kick together
Play it and they turn together and kick together
For each person in club, have them say how tall they are

• Note: used another variable crew3!

I'm this tall 0.5893100245132282
How do you calculate the tallest person?

• When there are two creatures?
• When there are three creatures?
• When there are four creatures?

• When there are ten creatures?
• When there are 100 creatures?
How do we determine who is the tallest?
What if we add in more creatures?

Algorithm

- Assume first person is the tallestSoFar
- Compare tallestSoFar to second person,
- If second person is taller, update tallestSoFar to the second person
- Compare tallestSoFar to third person
- If third person is taller, update tallestSoFar…
Algorithm to find the tallest

• Create variable for tallestSoFar and set to first person in the array
• For each item in the array, if they are taller than the tallestSoFar, reset tallestSoFar to them
Scene Function tallest

- Note need a parameter that is an array of Biped
- Get first item in array as “creatures[0]”
Use tallest function

• Have the tallest say, “I’m the tallest”
• Shrink the hare by 0.5
• Have the tallest say, “I’m the tallest”
• Increase the bunny by 4 times
• Have the tallest say, “I’m the tallest”

• See next slide
Who’s the tallest?

I'm the tallest

I'm the tallest

I'm the tallest

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What happens if you add in two more bipeds in the array?

- **Add them** to the array

![Custom Array Image](image-url)
myFirstMethod Code (part1)

```plaintext
for each Biped crew in club
  do in order
  crew turn RIGHT 1.0 add detail
  crew getRightHip turn BACKWARD 0.25 duration 0.25 add detail
  crew getRightHip turn FORWARD 0.25 duration 0.25 add detail
loop

each Biped crew2 in club together
  do in order
  crew2 turn RIGHT 1.0 add detail
  crew2 getRightHip turn BACKWARD 0.25 duration 0.25 add detail
  crew2 getRightHip turn FORWARD 0.25 duration 0.25 add detail
```
myFirstMethod code (part 2)
This lecture covered

• Creating an array of objects
• For each object in the array (one at a time) execute code with “for each in “
• For each object in the array (together) execute code with “each in together”