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
- Reminder: Assignment 5 due Oct 30

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

- Arrays are NOT visual, but movements in them are!
- Each element in the array is in a particular slot number.
- 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

```
while _ for each in _ if _
```

**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

```
for each Biped crew in 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!

```
for each Biped crew3 in club
    crew3 say "I'm this tall" + crew3 getHeight

loop
```

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”

Who’s the tallest?

- See next slide
What happens if you add in two more bipeds in the array?

- Add **them** to the array

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”
- Writing a function that calculates a value by looking at all the elements in an array
- An array is NOT visible, but actions to an array are!