Overview

• This tutorial will teach you how to use lists. A list is a sort of holding place for a row of objects.

• With a list, you can make several objects do the same thing at the same time without having to write out code for each one. You can also have them do the same thing one object at a time.

• We will use a list to make a group of stuffed tigers to perform some actions at the same time, and then one at a time.

Adding the Objects

• Go to the Biped classes then add four StuffedTiger objects to your world.

• Add two other people to your world.

• I’ve added the SnowMan and SnowWoman from the Gallery.

Loading the World

• Open a new world, with any template.

• Save it in a directory that you can find again.

• After you have opened the file go into the layout mode by clicking on the Setup Scene button (bottom right corner of animation screen).

• Click on the Camera Markers menu. Click Add Camera Marker. Name the camera view originalPosition.
Part 1: Making a List

• We will use a list to make all four of the tigers jump up and down together and then kick and spin one at a time.
• Click on Scene tab in the top of the editor, and then click on Add Scene Property... under the unmanaged section.
• Once a box appears, set the value type to Gallery Class, then click on Biped in the Selection column in the middle. You will see 6 check marks in the object column on the left. That means the list can contains any biped characters we have added . Click OK.

Making a list (cont 1)

• Check the is array box
• Name the list as tigers.
• Click on the initializer -> Custom Array... -> add the four tigers in
➢ See the screenshot on the next slide for an illustration.
Part 2: Writing the method

- Drag a `each in _ together` into `myFirstMethod`.
- For item type: Choose `Gallery Class` and check on Biped in the middle column like previously then click OK.
- Name the item `atiger`
- For array: choose `this.characters`, it will show as `this.tigers`
Step 2: in order
- Now drag a **for each in** underneath the **each in_together** block, choose **Biped** as item type, **onetiger** as the item name, and **this.tigers** as the array.

For all in order (cont 1)
- **For each in _** means the tigers will perform all of the instructions that we add inside of it, one right after the other (in the order that they were added to the list).
- We want the tigers to each turn their left leg and spin one at a time.
- However, the **onetiger** is just a placeholder, so we cannot tell **onetiger** to turn its left leg.
- We will have to use a class-level built-in function to turn only a part of the object.

For each in_ (cont 2)
- Select **onetiger** in the object tree.
- Hover your mouse at the right arrow sign next to **onetiger** in the object tree, then click on **onetiger** getLeftHip.
• Drag in turn, then backward, then ¼ revolution. Set the duration to .25 seconds.
  ➢ See the screenshot on the next slide for an illustration.

• Select onetiger from the object tree again.
• Drag into the For each in _ again below the leftHip command, and select turn, then right, then 1 revolution. Set the duration to .25 seconds.

For each in _(cont 2)

• Then choose onetiger and select onetiger getLeftHip like we did previously and drag another turn, then forward, then ¼ revolution. Set the duration to .25 seconds.
• Your For each in _ code should look like this so far:
The complete method

- Here is the complete method. Don’t forget to comment your code!

```javascript
for each (Biped) this.tiger in this.tigers together
    // all of the tigers move up and down at the same time
    this.tiger.turnToFace(this.camera), duration: 0.25, add detail!
    this.tiger.move(UP, 1.0, duration: 0.25, add detail!
    this.tiger.move(DOWN, 1.0, duration: 0.25, add detail!
    // the tigers each kick and spin
    this.tiger.getHip, turn: BACKWARD, 0.25, duration: 0.25, add detail!
    this.tiger.turn: RIGHT, 1.0, duration: 0.25, add detail!
    this.tiger.getHip, turn: FORWARD, 0.25, duration: 0.25, add detail!
```

Step 4: Objects with different parts

- So far, our list only has tigers in it. Add the two other people objects to the list:
  1) Click on Scene tab on the top of the editor
  2) Under unmanaged section, click on the box next to the tigers list
  3) Click on Custom Array... and select the object you want to add.
  ➢ See the screenshot on the next slide for an illustration.

Play your world now
Warning

• You can’t add a non-biped object to a list of Biped objects
• Adding the snow man and snow woman to the list works because they are Biped and both have leftHip as the label for one of their body parts.
• If your character does not have a part named leftHip you might get an error because the world is searching for a leftHip part to move that is not there.

Recap

• Lists are useful for having multiple characters perform the same set of actions.
• Each in_together means everything in the list will perform at the same time.
• For each in_ means everything in the list will perform an action one right after the other.
• To find the sub-parts of an object, click on the arrow next to the object in the object tree. Make sure all of the characters have the same parts, labeled the same way.
• WARNING: Do not add too many objects to your list, because doing so will slow your world down significantly.