

## Lists Tutorial



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## 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 green button **Add Objects** (toward the middle of screen)
- Click **more controls**. Click **drop a dummy at the camera**. Rename the dummy 'originalPosition.' To leave the layout mode, click **done**

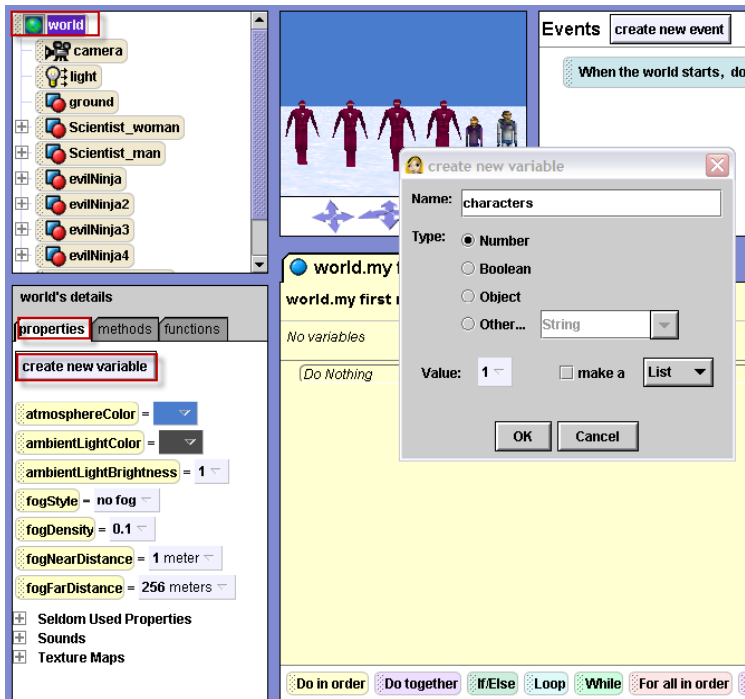
## Adding the Objects

- Go to the gallery and add four **evilNinjas** to your world (from the People folder)
- Add two other people to your world
- I've added the **scientist-man** and **scientist-woman**



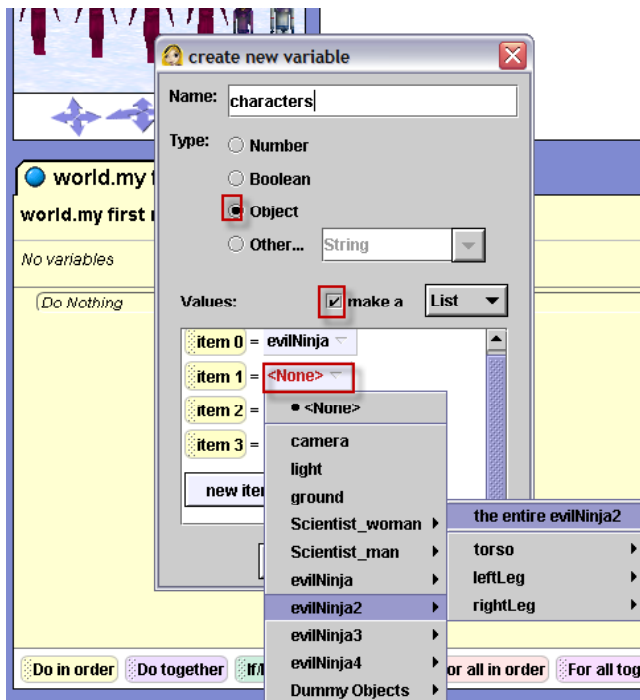
## Part 1: Making a List

- We will use a list to make all four of the ninjas jump up and down together and then kick and spin one at a time
- Click on the world in the object tree and on the **properties** tab
- Click **create new variable**
- Name it 'characters'
- See the screenshot on the next slide for an illustration



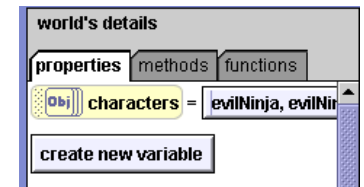
## Making a list (cont 1)

- Select “object” as the type
- Check the box “make a List”
- Click the “new item” button four times
- For item0 select evilNinja
- For item1 select evilNinja2
- For item2 select evilNinja3
- For item3 select evilNinja4
- See the screenshot on the next slide for an illustration



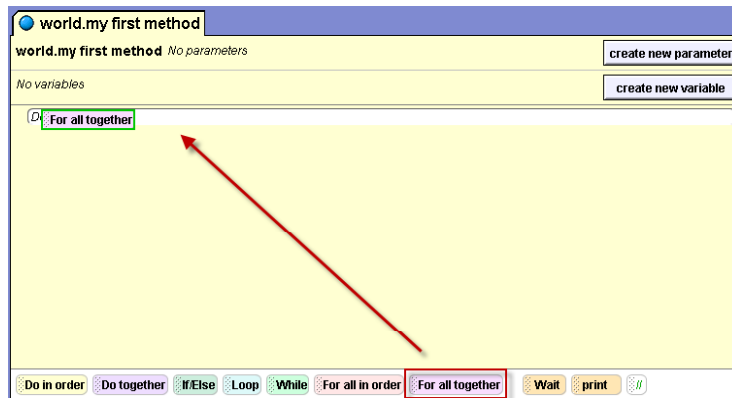
## Making a List cont(2)

- Now, there is a “characters” list variable at the top of the world “properties” tab



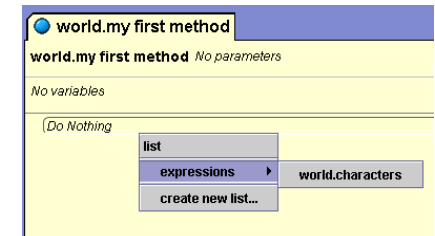
## Part 2: Writing the method

- Drag “for all together” into “world.my first method”



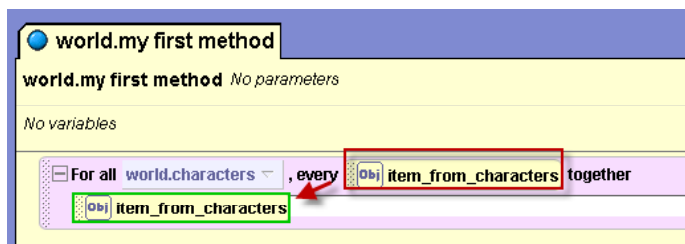
## Writing the method (cont 1)

- In the drop down menu, select “expressions”, then select the list world.characters
  - “For all together” means that all of the items in the list will perform the instructions at the same time.



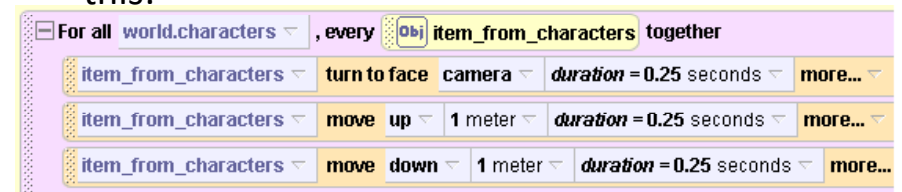
## Step 1: For all together

- Click on “item\_from\_characters”
- And drag it on top of the “Do nothing”



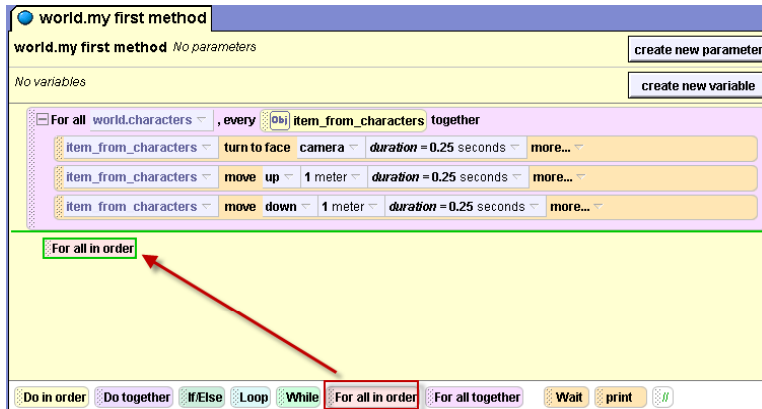
## For all together (cont 1)

- In the drop down menu, select “turn to face” and then select “camera”
- Click on “more” to change the duration to 0.25
- Drag “item\_from\_characters” again and select the “move” up and “move” down instructions.
- Play your world. Your method should look like this:



## Step 2: For all in order

- Now drag “for all in order” underneath the “for all together” and select “expressions”, then world.characters



## For all in order (cont 1)

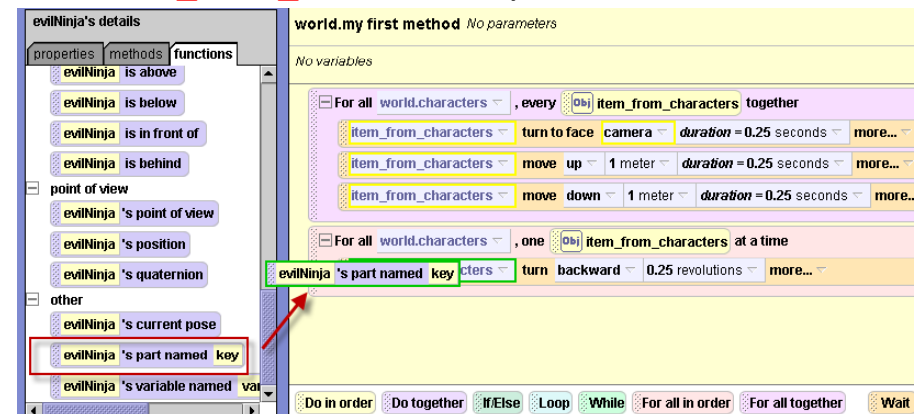
- For all in order means the ninjas will perform all of the instructions, one right after the other (in the order that they were added to the list)
- We want the ninjas to each turn their left leg and spin one at a time.
- However, “item\_from\_characters” does not have any parts
- We will have to use a class level built in function to turn only a part of the object.

## For all in order (cont 2)

- First, drag “item\_from\_characters” into the “for all in order” and select “turn backward” 1/4
- Click on “evilNinja” in the object tree.
- Select the “functions” tab and scroll down to “evilNinja’s part named key”

## Step 3: Object part named key

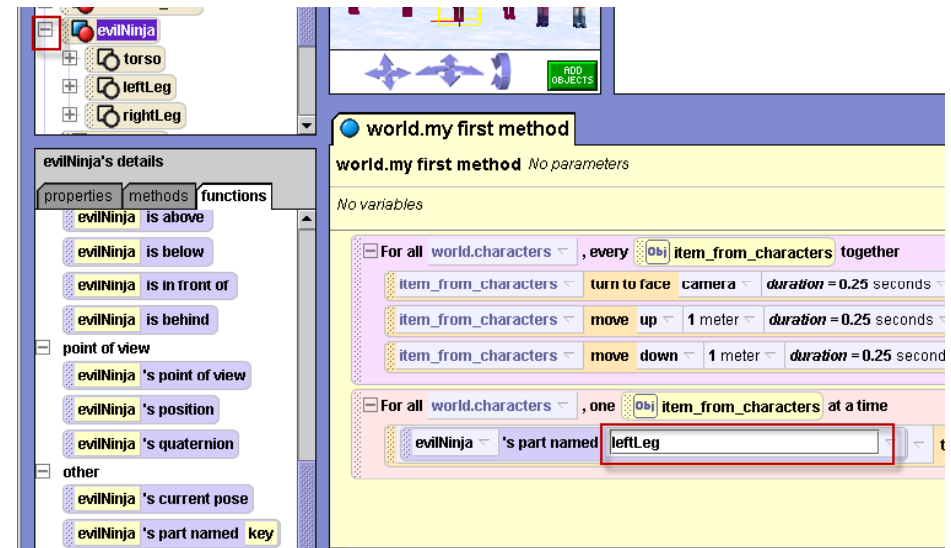
- Drag that function on top of the item\_from\_character in your instruction



## Object part named key (cont 1)

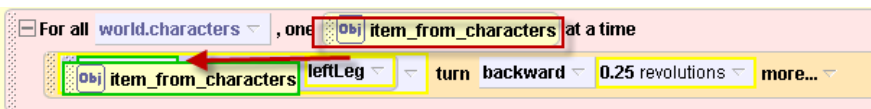
- 1) In the object tree, expand the + beside evilNinja to see that it's body part is named "leftLeg"
  - 2) In the turn backward instruction, click on the box and type leftLeg with the same capitalization and spacing as it appears in the object tree – no spacing, the second L must be capitalized
- See the screenshot on the next slide for an illustration

## Object part named key (cont 3)



## For all in order (cont 1)

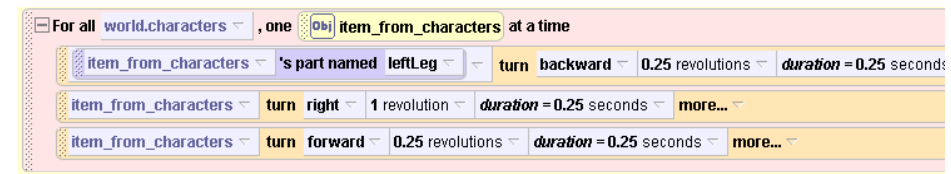
- Drag "item\_from\_characters" on top of evilNinja



- Drag "item\_from\_characters" into the "for all in order" again and select "turn right" 1 revolution

## For all in order (cont 2)

- Then drag "item\_from\_characters" again and select "turn forward" 1/4. Your loop should look like this so far:



## For all in order (cont 3)

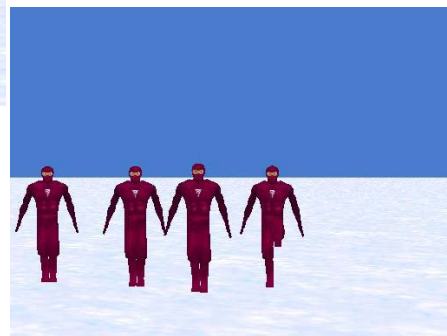
- That last instruction should be for the leftLeg only.
- So drag the function “evilNinja’s part named key” on top of the “item\_from\_characters” and type in leftLeg again.
- Drag “item\_from\_characters” on top of evilNinja in the “part named key”

## The complete method

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

```
// created by Deborah Nelson
For all world.characters , every item_from_characters together
// all of the ninjas move up and down at the same time
item_from_characters turn to face camera duration = 0.25 seconds
item_from_characters move up 1 meter duration = 0.25 seconds
item_from_characters move down 1 meter duration = 0.25 seconds
For all world.characters , one item_from_characters at a time
// the ninjas each kick and spin
item_from_characters 's part named leftLeg turn backward 0.25 revolutions duration = 0.25 seconds
item_from_characters turn right 1 revolution duration = 0.25 seconds
item_from_characters 's part named leftLeg turn forward 0.25 revolutions duration = 0.25 seconds
```

## Play your world now



## Step 4: Objects with different parts

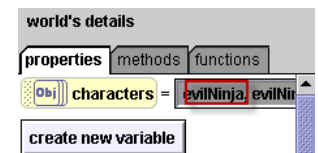
- So far, our list only has evilNinjas in it. Add the other objects to the list:

1) Click on **world** in the object tree

2) Go to the “**properties**” tab

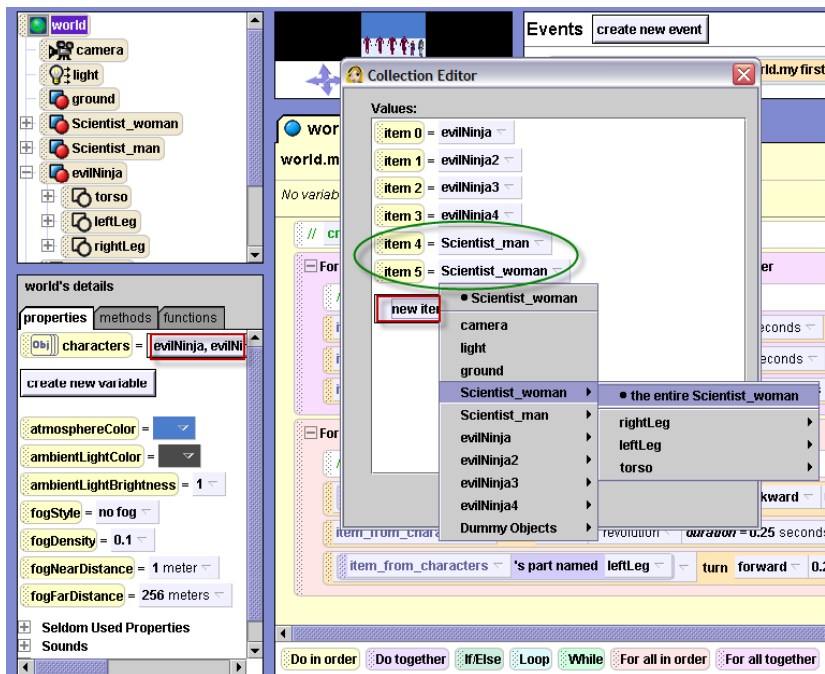
and click on the box beside

characters



1) Click on “**new item**” and select the object you want to add

➤ See the screenshot on the next slide for an illustration



## Warning


- Play your world.
- If you did not use the same objects as this demonstration, you may get an error highlighting the “parts named” function.
- Adding the **scientist-man** and **scientist-woman** to the list only works because they both have **leftLeg** as the label for one of their body parts
- If your character does not have a part named leftLeg you get the error

## Fixing the error

- For example, I've added the **Samurai** (from the web gallery People folder).
- When I add him to my list and play the world, I get the following error:
- Because the Samurai does not have a part named leftLeg



## Fixing the error (cont 1)

- In the object tree, click on the + beside **Samurai**
  - Double click on the body part named **Lleg**
  - Rename it leftLeg
- 
- Now play your world
  - Success!

## How to remove an obj

- To delete an object from your list:

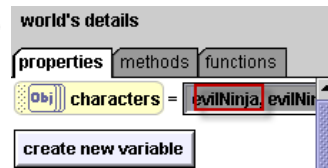
1) Click on **world** in the object tree

2) Go to the **“properties”** tab

and click on the box beside

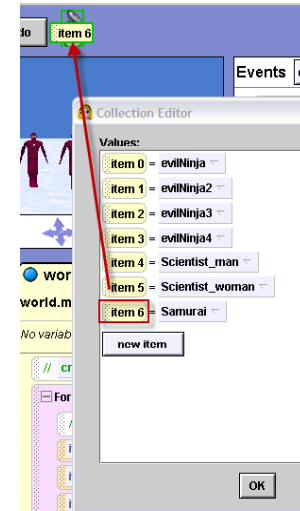
Characters

- See the screenshot on the next slide for details.



## Deleting an object from your list

- 3) Drag the item you want to delete to the trash can.
- This object is still in your world, but it was removed from the list



## Recap

- Lists are useful for having multiple characters perform the same set of actions.
- **For all together** means everything in the list will perform at the same time
- **For all in order** means everything in the list will happen one right after the other
- To make the sub parts of an object move, use the function **part named key**. But 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