CompSci 94
Chap 9 Sec 1
October 29, 2013

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Announcements

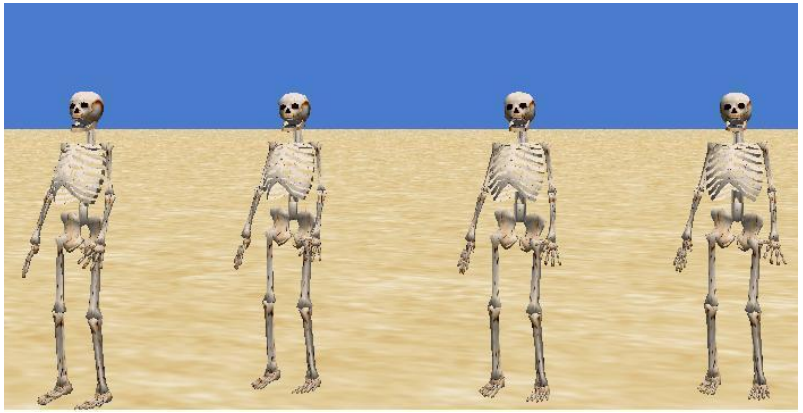
- Read Chapter 9, Sec 2 for next time
- Assignment 6 due Tuesday, Nov 5
- Today
  - Chapter 9, Section 1 – Lists

Collections

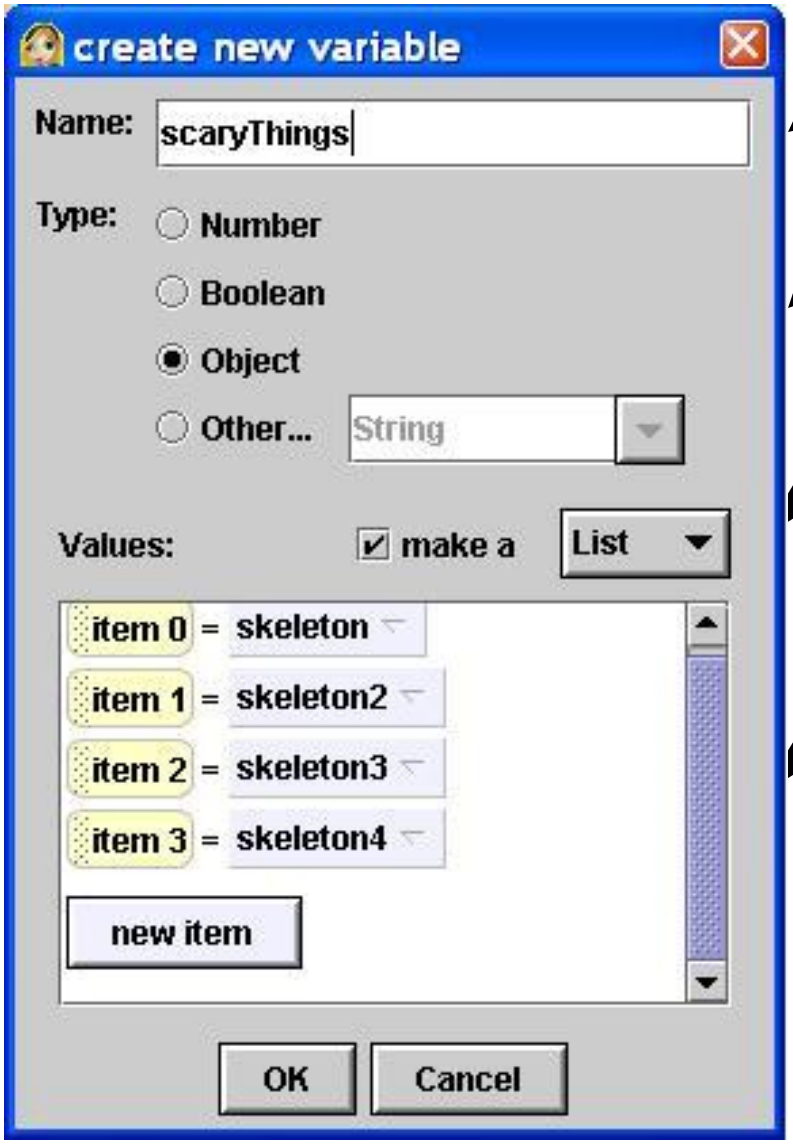
- In some animations, several objects must perform the same actions
  - Example: marching band marching
- It is convenient to collect all objects into a group (collection)
  - Major benefit – write code for all the objects in the group (rather than separate code for each object)
- List
  - Way to organize objects into a collection
    - Shopping list, todo list
  - In programming, a list of objects is a **data structure**

Creating Lists

- In Alice, a list can be a list of numbers, or a list of objects, or a list of colors, etc.
- Let's create a list of skeletons



Create List (cont)



- Type in name
- Select type
- Select “make a list”
- Add skeletons to list (click “new item” 4 times)
- Result is:

Programming with a List

- Can "iterate through a list"
  - Do something to each item in the list
    - In order (use "For all in order")
    - All together (use "For all together")
    - These structures are **only** used with lists!

Example/Demo: Iteration in Order

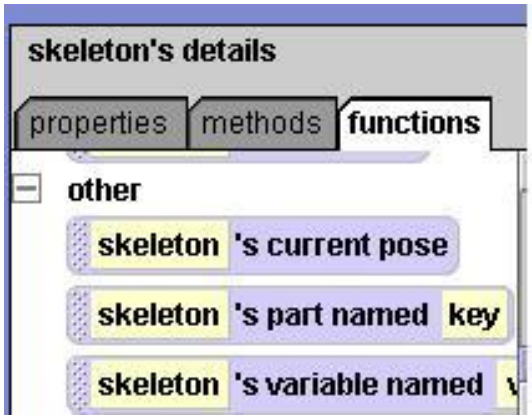
For each skeleton in order

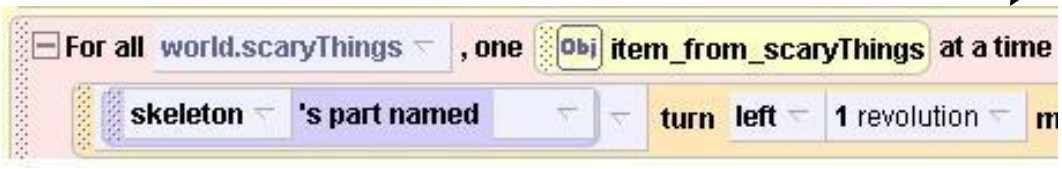
    skeleton says “Boo”

For each skeleton in order

    skeleton turns its head around

Applying a Part of an object





- Drag in skeleton turn
- Select part
- Drag over part
- Drag in item
- Type in part (must spell correctly!)

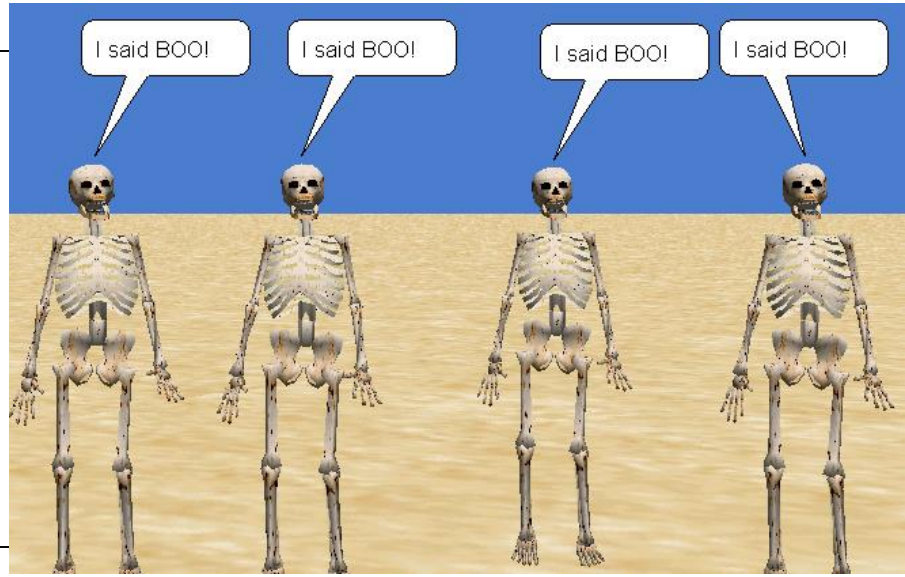
Example/Demo: Iteration Together

For all skeleton together

skeleton says “Boo”

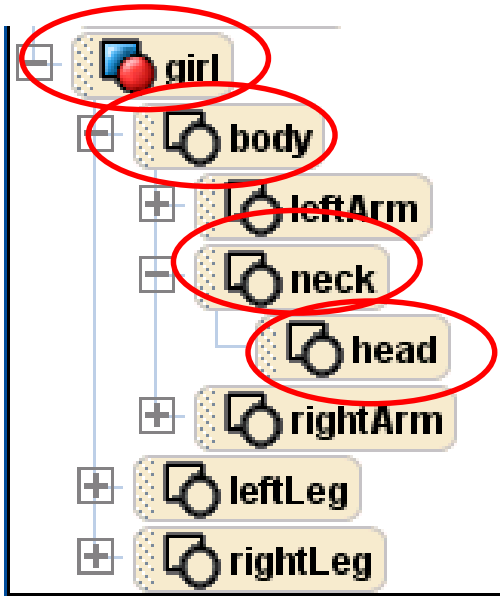
For all skeleton in together

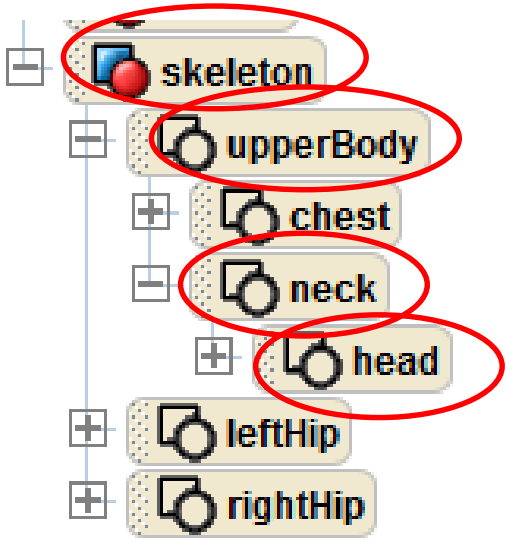
skeleton turns its head and neck around



Add in a girl

- Her part structure to the head are almost the same as skeleton: (body,upperBody), neck, head

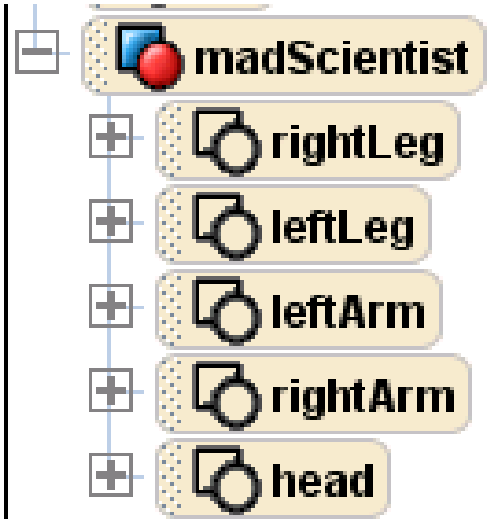




- Rename “body” part to “upperBody”
- Add her to the list and click “Play”

Add in MadScientist

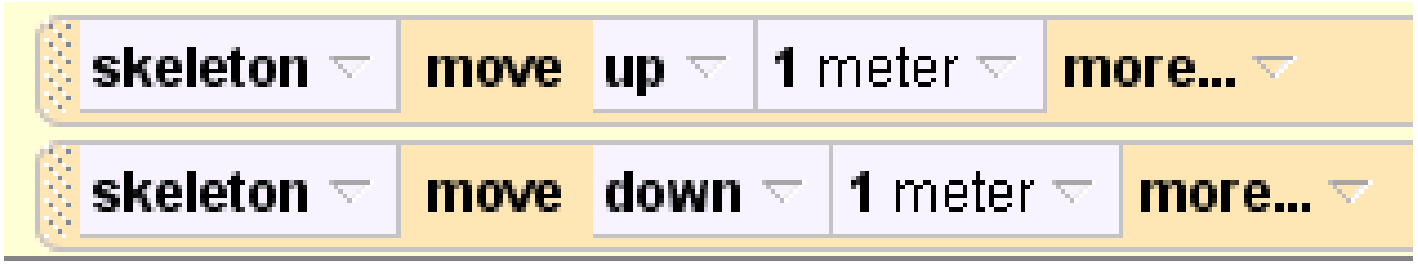
- His parts are not the same structure as the skeleton, cannot be renamed to match.



- What happens if we put him in the list and Play?
- Alice bug – cannot delete from a list, should be fixed now in newest version!

Selecting an item from a list

- You can select a random item or a specific item from a list.
- This code makes a particular skeleton jump

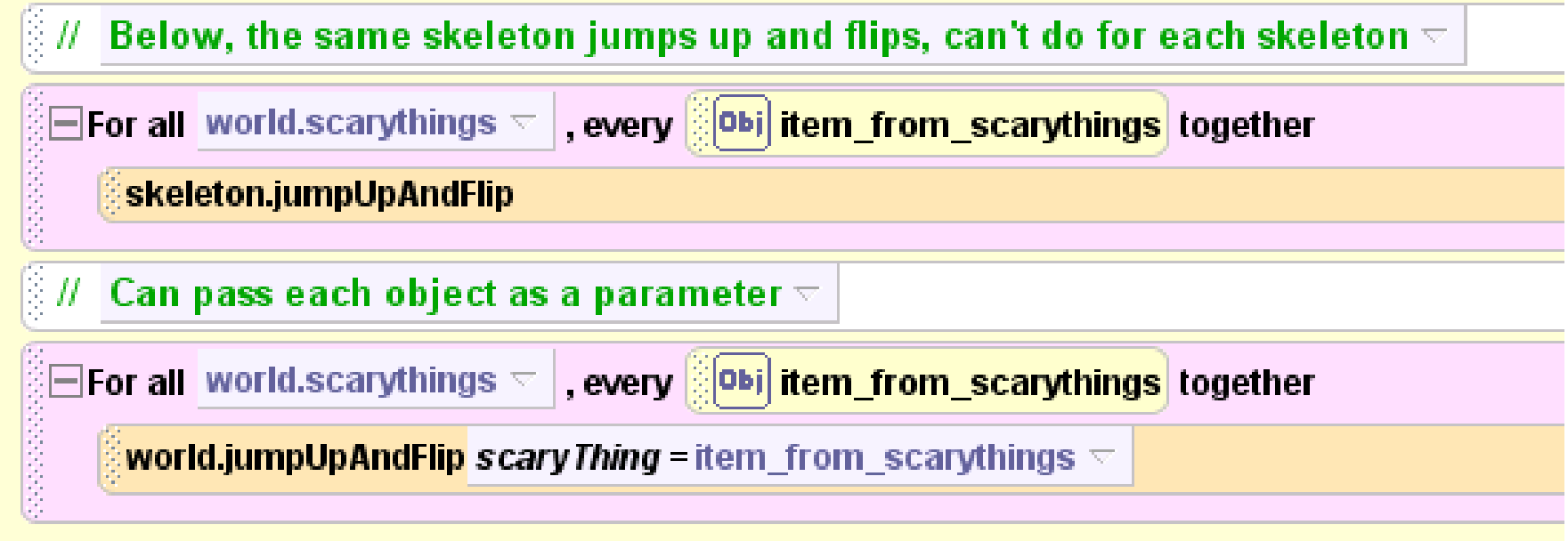


- Suppose we want to have one item from our list (chosen randomly) to jump up and down. How would we do that?

List Questions

- What are differences between *For all in order* and *For all together*?
- Why is the list a world variable?
- When would you want to use each of them?
- What can you put in a list?
- When can you refer to a part of an object in a list?
- What type of method can you not put in a *For all in order* or *For all together*?

Compare these two loops

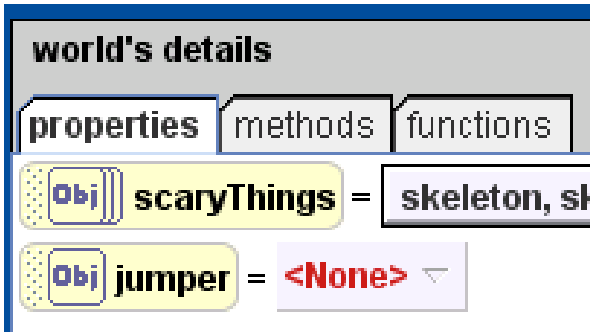


Classwork today

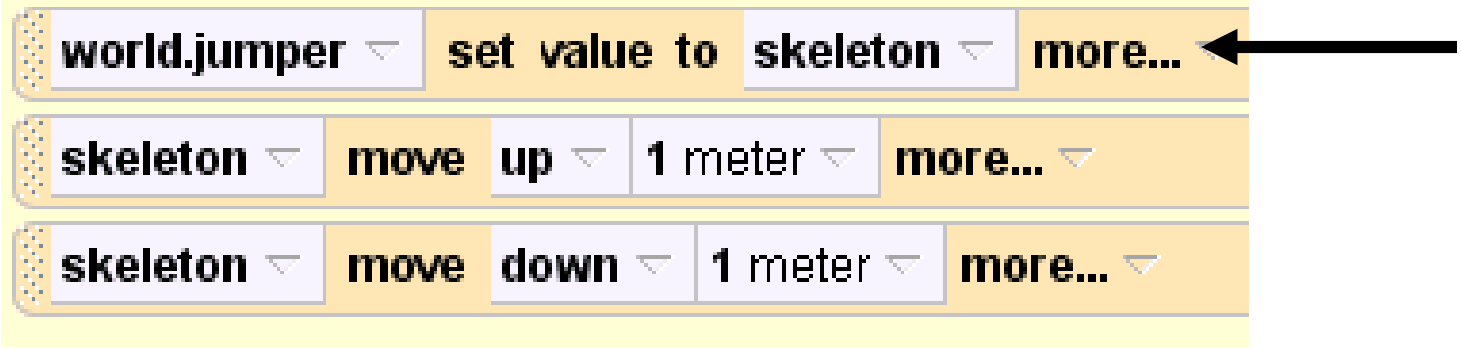
- Create a list of players
- Make them do several things (See handout).

Solution to having a random object from a list jump

- Add a variable called jumper

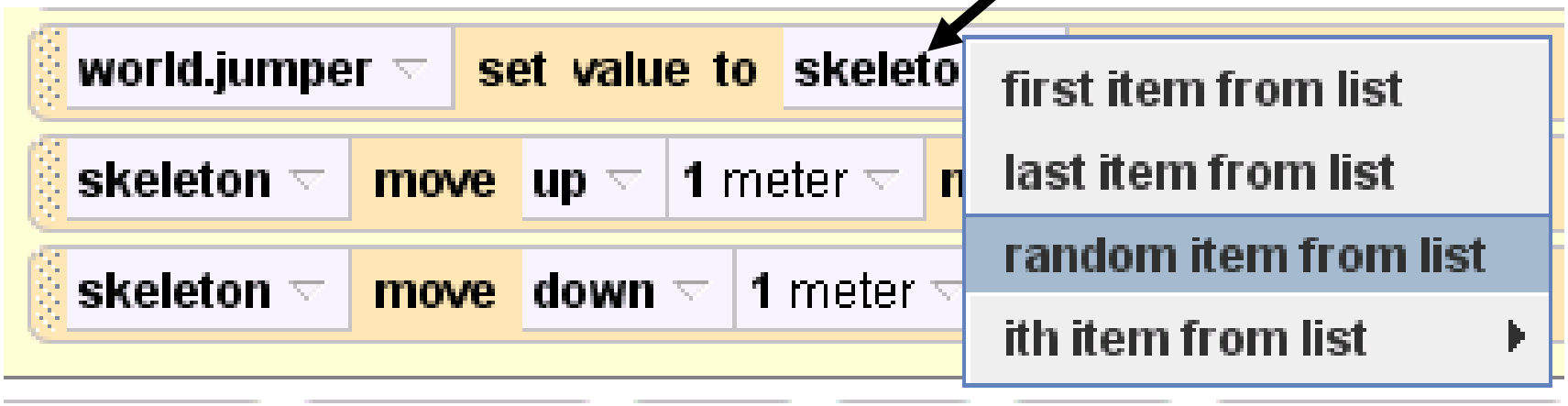


- Drag over and set the variable “jumper” to skeleton temporarily



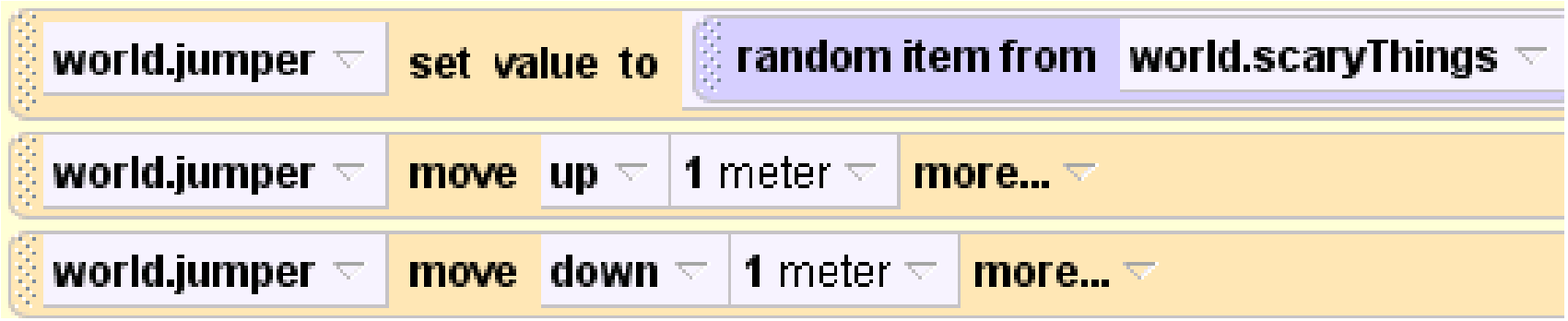
Solution (cont)

- Drag over the list scaryThings and drop it on skeleton. You can choose which item in the list. Select “random item from list”



Solution (cont)

- Then change “skeleton” in the move commands to “world.jumper”



- Play a random object from your list will jump each time this code executes.