Announcements

• Read Chapter 9, Sec 2 for next time
• Assignment 6 due Tuesday, March 24
• Today
  – Chapter 9, Section 1 – Lists
  – Show Halloween card….
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

• A list - one way to organize objects into a collection
  – You may use lists to organize
    • Shopping list
    • Todo list

• In programming, a list is a collection of objects or information. We call an organizing structure 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:

```
world's details

properties methods functions

<table>
<thead>
<tr>
<th>Obj</th>
<th>scaryThings = skeleton, skeleton2, skeleton3, skeleton4</th>
</tr>
</thead>
</table>

new item
```
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”)
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
Example/Demo: Iteration Together

For all skeleton together
  skeleton says “Boo”
For all skeleton in together
  skeleton turns its head and neck around
List Questions

• What are differences between *For all in order* and *For all together*?
• 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*?
Below, the same skeleton jumps up and flips, can’t do for each skeleton

For all `world.scarythings`, every `Obj item_from_scarythings` together
`skeleton.jumpUpAndFlip`

Can pass each object as a parameter

For all `world.scarythings`, every `Obj item_from_scarythings` together
`world.jumpUpAndFlip scaryThing = item_from_scarythings`
Classwork today

• Create a list of players
• Make them do several things.