Class Today

- Making procedures more flexible – adding in parameters
- Loops - repetition

- Assignment 3 due Thursday night, Feb 8
  - Turn in Alice worlds using websubmit
  - Build and link to two web pages
  - Put storyboards on web pages

Review 1

- Where in Alice do you add a cameraMarker?

- In my code, how do I place the camera on the cameraMarker so it is looking the direction of the cameraMarker?

Review 2

- How do I get a Hare to circle halfway around a cow in a forward direction if they are both facing front and the Hare is to the right of the cow?
Review 3
• If I want to teach the cow to Dance. How would I create the Dance procedure in Alice?

• How do I test just my Cow Dance procedure?

Setup for Lecture Demo
• Four characters: (left to right)
  – MadHatter, Hare, Cow, Bison
  – The Bison is back further

Built-in Procedures are flexible
• Move – pick direction and how far

Write procedures with parameters
• A parameter is a “place holder” for a value

• An argument is the value you put in the place holder
Teach the Hare how to jump – write a procedure

• Click on Scene tab, then Hare, then add Hare procedure

But Wait!!!! A Hare is a Biped! Instead – we could write jump for all bipeds….

• Click on Scene tab, then Biped, then add biped procedure

All bipeds have the same structure
Write jump for all bipeds

How Far to jump?

• Add parameter for distance to jump
  – Type: DecimalNumber
  – Name: distance
Use parameter distance as place holder

- Distance
- Drag over numbers you want to enter

Distance is a place holder for a number

- Distance appears in two places in the code

How high to jump?

- Since we added a parameter for jump, where we call jump, we must now select a number for how high to jump

Add another parameter, how fast to jump

- Parameter speed, add duration with speed
- Drag speed over the duration numbers!
Arguments – values passed to procedures

- Add a value for speed
- madHatter is a biped and can also jump

Another new concept - Looping

- We move code to my first method and drag up count from the bottom and pick a number

Write another procedure for hare to ride a quadruped animal

- Write this one as a Hare procedure
- Focus on the hare jumping on and riding the cow
- But really want the hare to be able to ride any quadruped (4 legs)

Another way to add a procedure

- Choose Hare from menu
- Name procedure ride
Add a parameter **transport**

- The type is a quadruped (from the Gallery class)
- Then name it **transport**

```
Ride
procedure
with two parameters
transport and
distance
```

Add direction and phrase parameters

- Use new parameters
- Note their types!

```
Call **ride** procedure twice

- Hare rides cow, then bison
- Bison turns different direction and hare says something different
```
This lecture covered

- Looping code a specific number of times with count
- Making procedures more flexible
  - Add parameter as a place holder
  - Plug in an argument when you call the procedure
- Make a procedure for a biped and it works for all bipeds