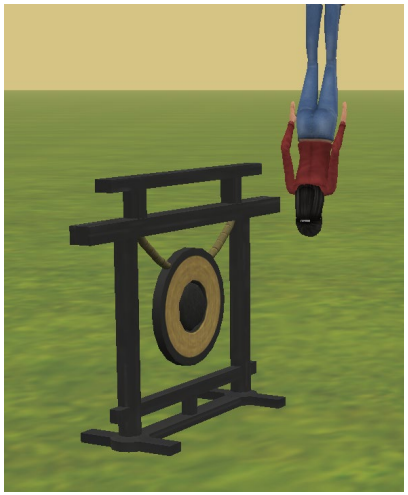
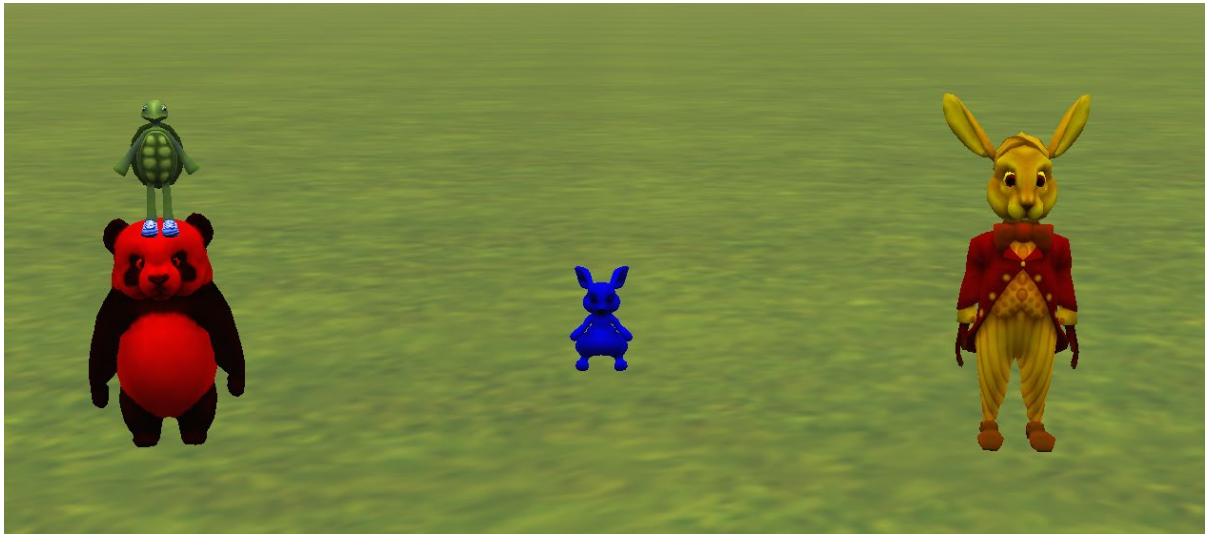
CompSci 94
Classwork: Biped Procs, Properties, Built-in Functions, Math
September 10, 2020





Prof. Susan Rodger

1) Setting up the scene

- Add in any ground, I chose grassy desert
- Drag in these objects so they are in positions similar to the picture on the next page
  - Biped: panda, alien, bunny, marchHare, tortoise
  - Build a person, I named mine Sandra
  - Props: gong, gongMallet
- We will do more adjustments with them

Setup Scene

- See next slide for setup adjustments

Scene Setup Adjustments

- Note that the bunny should be pushed back further than the panda and marchHare
- Your person should be far back.
- When you click run, make sure you can see the tortoise on the right side.

Put the GongMallet into the person's right hand

- See the next three slides on tips on how to get the mallet into the person's right hand.

- Note: Sometimes the mallet disappears and you just see a big ring. Go back to edit code mode, and then back to setup scene and you should see it

Steps to Put the mallet in the person's right hand/wrist

- Resize mallet to width 0.2
- With a one-shot turn the RightShoulder left 0.1 so it is out a bit
- Have the mallet "move to" the rightwrist with oneshot

Put the mallet in the person's right hand/wrist

- Then use the 2D-side view to adjust
- Use arrows to zoom in
- Now the mallet is close. You can try grabbing it and moving it closer but it is tricky.
- You can try oneshots, like move forward 0.25
- See next slide for pictures

Put the mallet in the person's right hand/wrist

Once the mallet is in the hand, how do you keep it in the hand when the arm moves?

2) Overview of story, but **follow steps** that follow to build the program

- Only Sandra and gong/mallet are in view. Sandra moves to the gong, does a front flip, and hits the gong. All at the same time, in 2 seconds, the gong sounds; Sandra, the gong and mallet fade away; and the panda, tortoise, bunny and marchHare appear. From above we see the tortoise circle everyone twice. Then the camera moves back to where it was before. The tortoise faces the marchHare, moves close to it, and says hello. The marchHare does a **forward double flip**. Then the tortoise circles the marchHare 1.5 times. At the same time the marchHare turns yellow. (cont.)

Overview of story (continued)

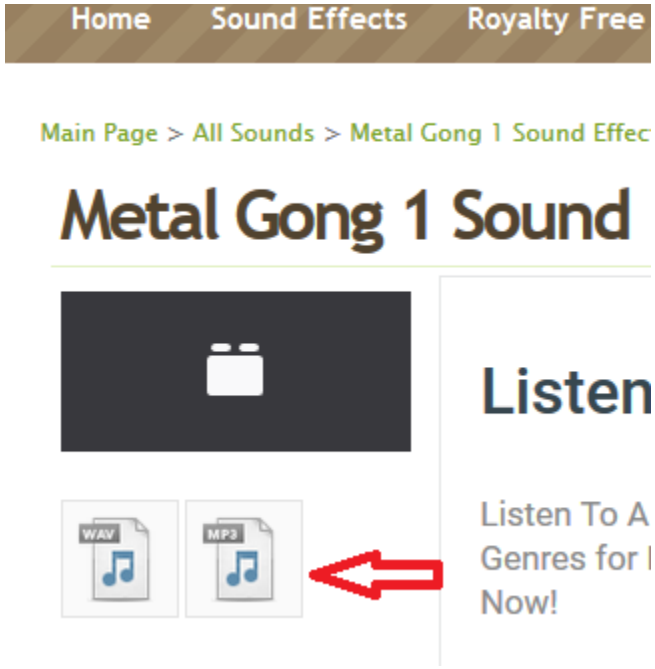
- The tortoise faces the bunny, moves close to it, and says hello. The bunny does a **backflip**. Then the tortoise circles the bunny 1.5 times. At the same time the bunny turns blue. The tortoise faces the panda, moves close to it, and says hello. The panda does a **double backflip**. Then the tortoise circles the panda 1.5 times. At the same time the panda turns red. The tortoise faces the panda and jumps up on the panda's head, facing the same direction. The panda then turns around once, does a forward flip and turns to its right to face the side. (with the tortoise attached). At the same time the panda moves off screen and the tortoise lands on the ground. The tortoise turns front and says The End. (see Steps that follow to build program)

3) More setup

- The panda, bunny, tortoise, and marchHare are for the second part of the story. In SceneSetup, make them all invisible through which property?
- The person needs to keep the mallet in their hand when they move. Which property should you set for this?
- The alien is just holding the position for the person. It should be right beside the gong.

4) Part 1 - code in myFirstMethod

- Put in a do In order
- Have the person **move to** the alien and then turn their right elbow to hit the gong.
- Play the gong sound.
- You will need to download the gong sound (mp3 file) from our course calendar on today's date
- From soundbible.com



4) (continued)

- The same time the gong plays, have the person, gong and mallet disappear, and the panda, bunny, marchHare and tortoise appear
- Run your world and make sure everything works!
- Make the alien permanently invisible once you have the right spot for you person to move to. We never want to see the alien!

5) Create two camera markers from invisible objects

- Put one where the camera currently is
  - Add in a quadruped with the name CameraStartView and use it as a camera marker
- Move the camera to a top view. Then drop another quadruped on top of the camera and name it CameraTopView.
- Be sure to make both objects being used as camera markers, invisible.

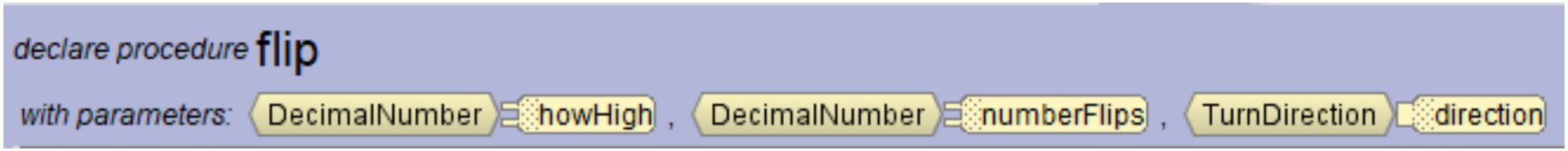
6) Part 2 code in myFirstMethod

- After the four animals appear do the following.
  - Change the camera to the top view.
  - Have the tortoise circle all the animals twice (a big circle)
    - Which object should the tortoise circle?
    - How does one circle around something? With turn and ?
- Put the camera back to the cameraStartView
- See picture of topView on next slide

Top view

7) Write **biped** procedure named **flip**

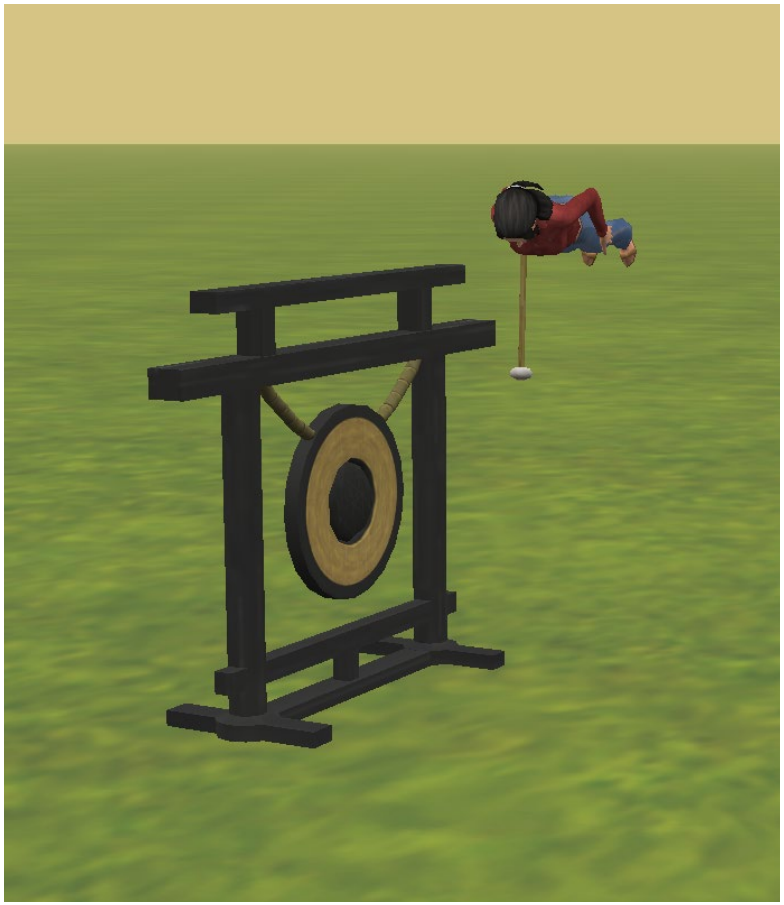
- This procedure should have the biped move up a specified amount, do a specified number of flips, the flips should be specified as forward or backward, and then move back down to where they were. These should all be parameters!
- Hint: To make the person flip in their middle, they will need to turn "as seen by" a part in their middle, such as their pelvis.

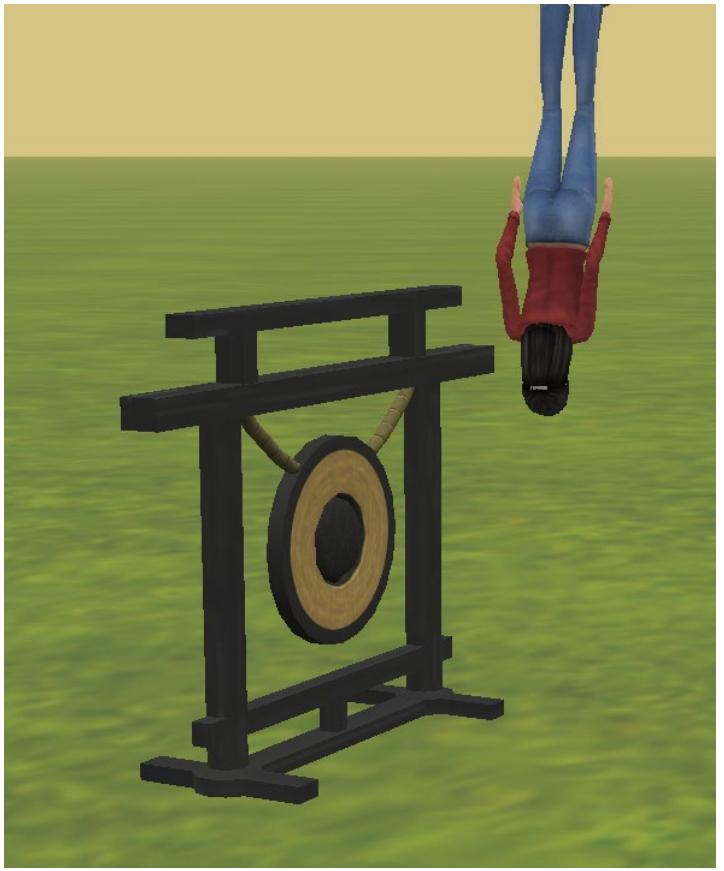


Add code in myFirstMethod

- When your person moves to the gong, have them do one front flip of height 1 unit before they hit the gong.
- You should also test out the backflip and multiple flips to make sure they work.
- Then change your code back to having your person do one front flip of height one unit.

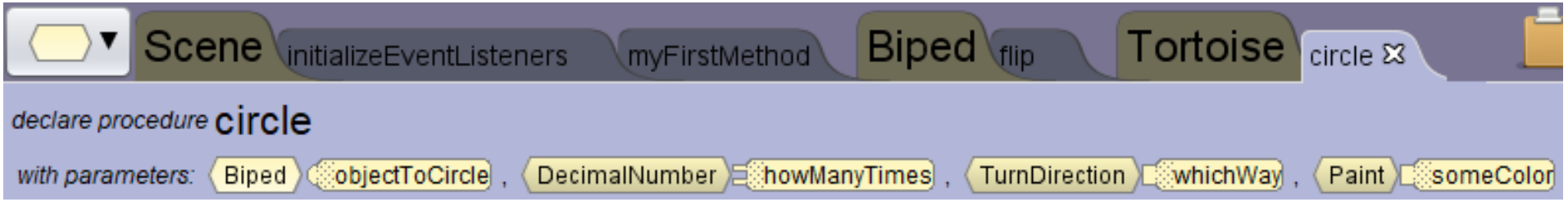
Person Flipping – note mallet in hand





8) Write the **tortoise** procedure named **circle**

- You will notice in the story that the tortoise does several things with each of the other three animals. Write the circle procedure to handle that.
- The circle proc has 4 parameters:



Circle parameters are:

- objectToCircle of type Biped
  - The animal the tortoise is interacting with
- howManyTimes of type Decimal number
  - This is the number of times to flip in the air
- whichWay of type TurnDirection
  - This is the direction of the flip – forward or backward
- someColor of type Paint
  - This is the paint color to paint the animal as the tortoise circles it.

The circle procedure should:

- Have the tortoise turn to face the animal
- The tortoise should move over to the animal
  - use the **distance to** function and **math** to adjust
- The tortoise says hello
- The animal does a flip of height 2. The direction and how many flips to do should come from the **howManyTimes** and **whichWay** parameters
- The tortoise turns to its left a little.
- As the tortoise circles 1.5 times around the animal, the animal is painted a specified color.

Parts of circle procedure



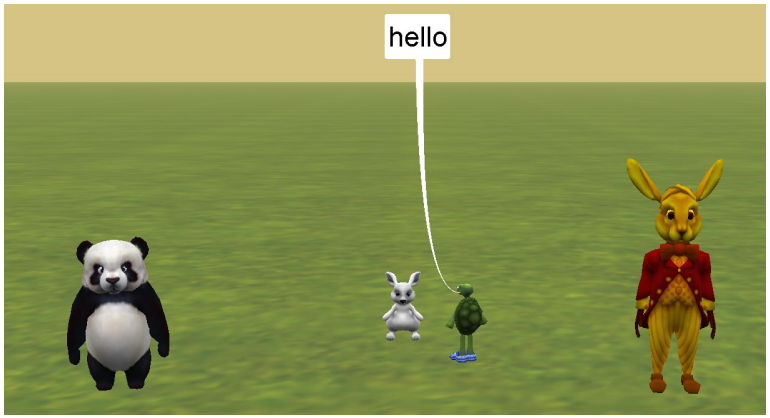

9) Part 3 code in myFirstMethod

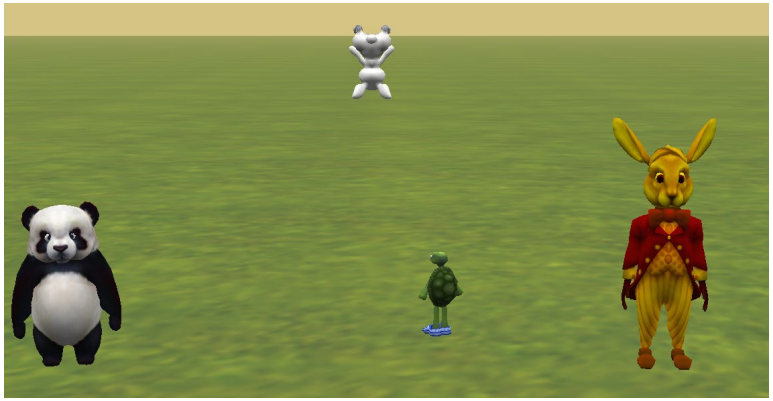
- After the tortoise has circled all the animals twice in one big circle and the camera view is back to the starting camera view, add the following code to myFirstMethod:
  - The tortoise faces the marchHare, moves close to it, and says hello. The marchHare does a **forward double flip**. Then the tortoise circles the marchHare 1.5 times. At the same time the marchHare turns yellow. (call circle procedure)
  - (more on next slide)

10) Part 3 code in myFirstMethod

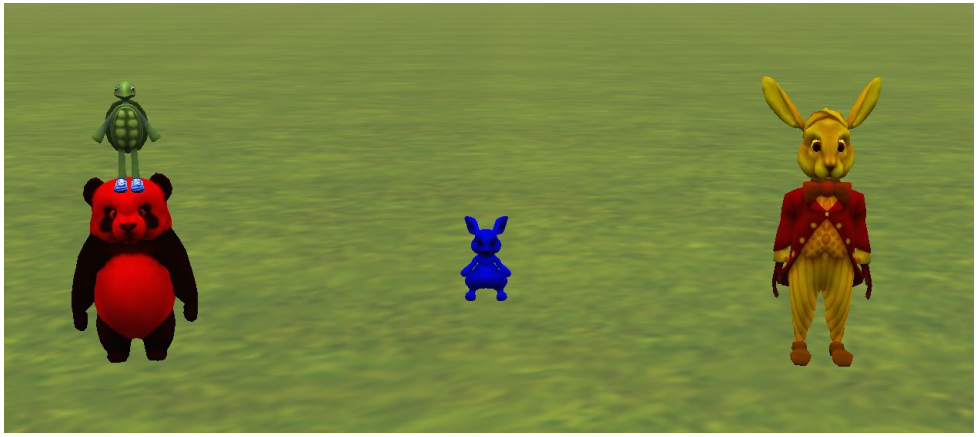
- The tortoise faces the bunny, moves close to it, and says hello. The bunny does a **backflip**. Then the tortoise circles the bunny 1.5 times. At the same time the bunny turns blue. (call circle procedure to do all of this!)
- The tortoise faces the panda, moves close to it, and says hello. The panda does a **double backflip**. Then the tortoise circles the panda 1.5 times. At the same time the panda turns red. (call circle procedure)

Visiting bunny – note marchHare is yellow





Next – the last part:



11) Part 4 - Code the rest of the story

- This code goes after Part3 code in myFirstMethod.
- The tortoise faces the panda and jumps up on the panda's head, facing the same direction.
  - Use function with math for how high to move up (the panda's height minus a small amount since the ears are part of the height), and how far to move to the panda's head. Use "orient to" for tortoise to face same direction
- The panda then turns around once, does a forward flip and turns to its right to face the side. (with the tortoise attached). At the same time the panda moves off screen and the tortoise lands on the ground.
- The tortoise turns front and says The End.