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Project A: Frog on a Lily Pad, Searching for a Fly

Introduction

For my project, I created two assemblies of 3D rigid parts using Blender. The first assembly consists of a frog object, a lily pad object, and a tongue object. The second assembly consists of the fly body, and the fly's wing. I used the obj to vertex converter to convert the Blender objects into vertex lists. Given the many vertices in the objects, the frog's totalling over 6,000 vertices, I used the surface normals to give the objects their color.

User Guide

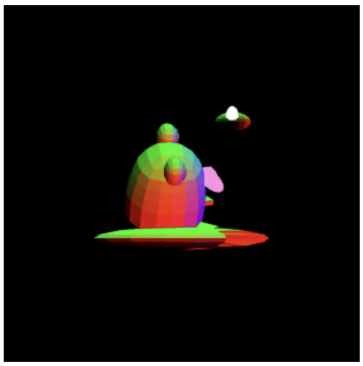
Goals

My goal for this project was to create two separate assemblies that illustrate a scene of a frog trying to catch a fly in a pond. I wanted to create two sequential joints in my frog assembly, with one joint being the one between the frog and the lily pad, and the second being between the frog and its tongue. For my second assembly, I wanted to demonstrate a fly flying around the frog erratically, with the wing moving using another joint.

Instructions

To control the project, there are three main points of user interaction. The first is using the cursor to control the position of the fly. Click and drag on the canvas to drag the fly around the screen, release the fly to allow it to keep moving. The second major user interaction are the arrow keys. You can use the arrow keys to also control the fly – pressing any arrow key will cause the fly to jump slightly in the specified direction. Of course, because its a fly, once you let go of the arrow key, it will continue to fly in the direction it wants to. Lastly, there are three buttons at the bottom of the screen which will allow you to control the spin of the frog, lily pad, and tongue. Pressing run/stop will pause or play the rotation, pressing 'Spin >>' will cause the part to spin rapidly to the right, and pressing 'Spin <<' will cause the assembly to spin in the opposite direction.

Results



INSTRUCTIONS:
Try using your cursor to drag the fly!!

Or, you can use the arrow keys instead. :)
Use the buttons below to control the rotations of the lily pad, the frog, and the tongue.

Lily pad:

Spin << | Run/Stop | Spin >>

Frog:

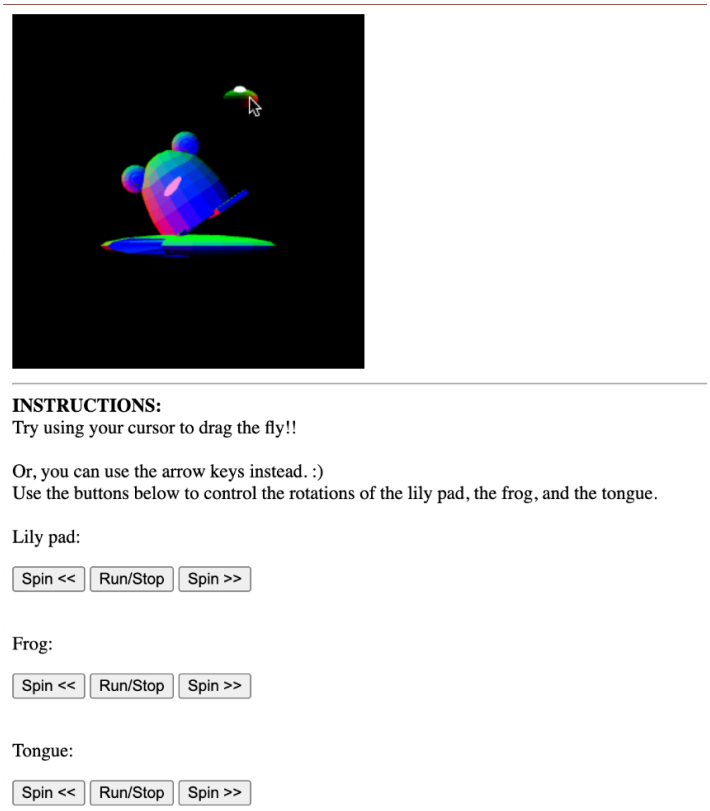
Spin << | Run/Stop | Spin >>

Tongue:

Spin << | Run/Stop | Spin >>

Figure 1: Screen capture of canvas and instructions after first opening the .html file

The image above captures what the project will look like after opening the html file. The lilypad should be rotating around its center continuously, the frog should be tilting back and forth on the lily pad, and the tongue should be swinging right to left. The fly, shown above the frog, should be flying around the canvas with varying x and y positions, as well as varying rates.



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Tongue:

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Figure 2: Using the cursor to drag around the fly

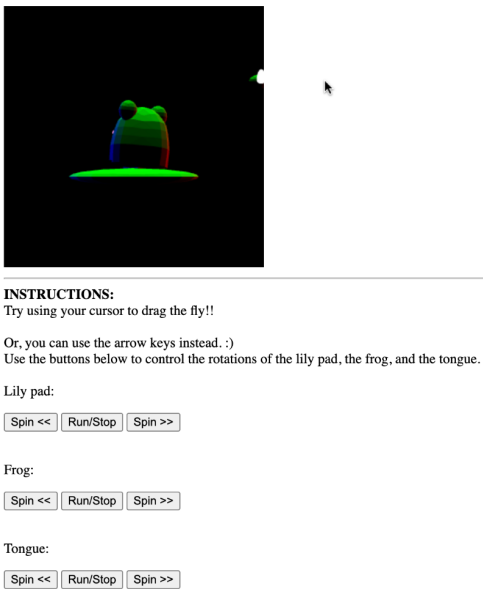

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Figure 3: Dragging the fly beyond the canvas will cause the fly to be "stuck".

The image in Figure 2 demonstrates the user using the mouse cursor to drag around the fly by clicking and releasing, the second main user interaction. Figure 3 is a demonstration of the uesr

trying to drag the fly beyond the canvas, which will result in the fly becoming “stuck” at the edge.

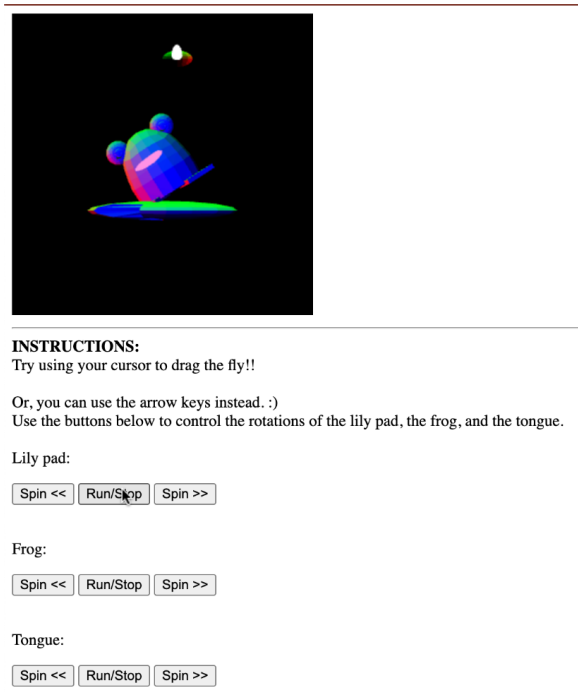

Figure 4: Pressing Run/Stop button to control the rotation of the lily pad.

The third image is a demonstration of the third major user interaction, where pressing ‘Run/Stop’ or the spin buttons for any listed part will allow the user to control the rotation of those parts.