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Sll411

Project A: Interactive Bird and Caterpillar

Goals

The main goal of this project was to create an animated bird and caterpillar under the graphics rubric that would respond to user I/O interactions. On a deeper level, however, the project was meant to give a better understanding of the entire graphics process from creating 3D colored shapes by creating one large array filled with vertex and color values, using trees of transformations to create moving jointed objects, adding a user interaction component through event handlers, and then combing Javascript, WebGL, and HTML to bring all components together. This project was meant to give hands-on-experience by using components discussed in class and the book.

User's Guide and Interactions

Arrow Up/Down/Left/Right keys move the caterpillar in the respective direction.

Enter key prints instructions below the buttons onto the screen.

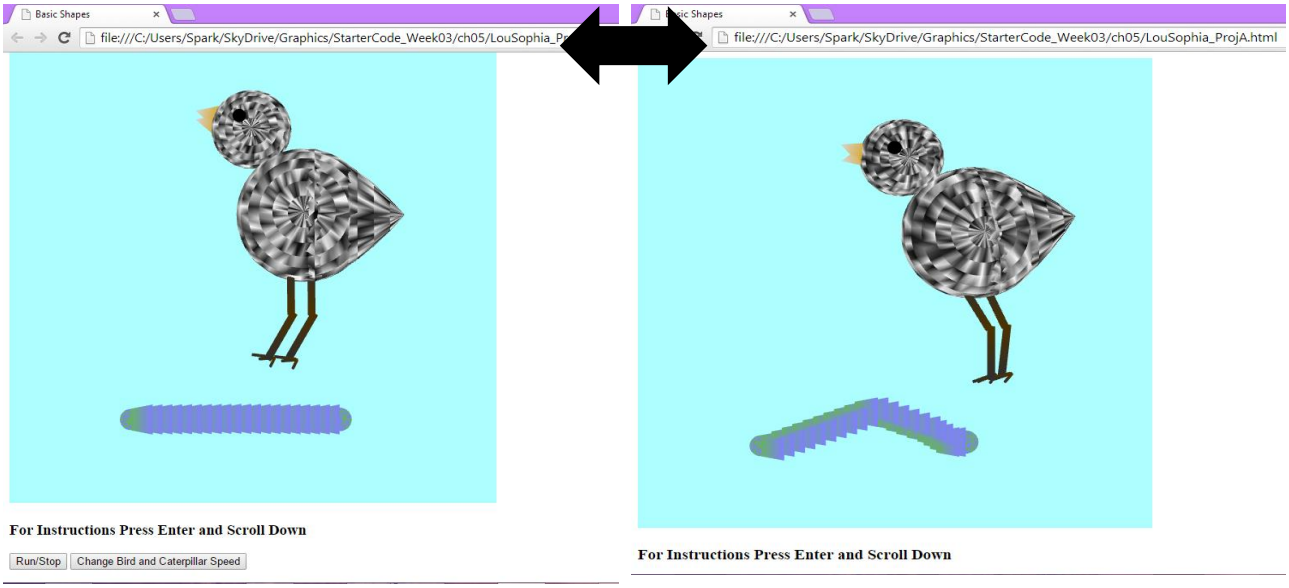
Mouse dragging is capable of rotating the bird around its head.

Run/Stop button will pause and resume movement of the bird and caterpillar.

Change Bird and Caterpillar Speed button will add 5 to the rotation angle rate.

Results

The bird and caterpillar move independently, continuously, and simultaneously at 8 degrees per second without any user input. The entire bird moves between -13.5 and 13.5 around the y and z axes as the currentAngle variable changes based on changes in time. The bird's beak also moves with the same animate function and currentAngle variable. Parts of the caterpillar are translated up and down to simulate a crawling caterpillar with the changing caterpillarAngle variable. These movements can be seen on the next page.



Figures 1, 2: Caterpillar and Bird initialized movements

The arrow keys translate the caterpillar up, down, left, and right on the screen by incrementing or decrementing the translated distance of the caterpillar on the screen. The caterpillar is capable of moving up to the height of the bird's knee joints and off the screen on the other sides. Below, some pictures illustrate this movement.

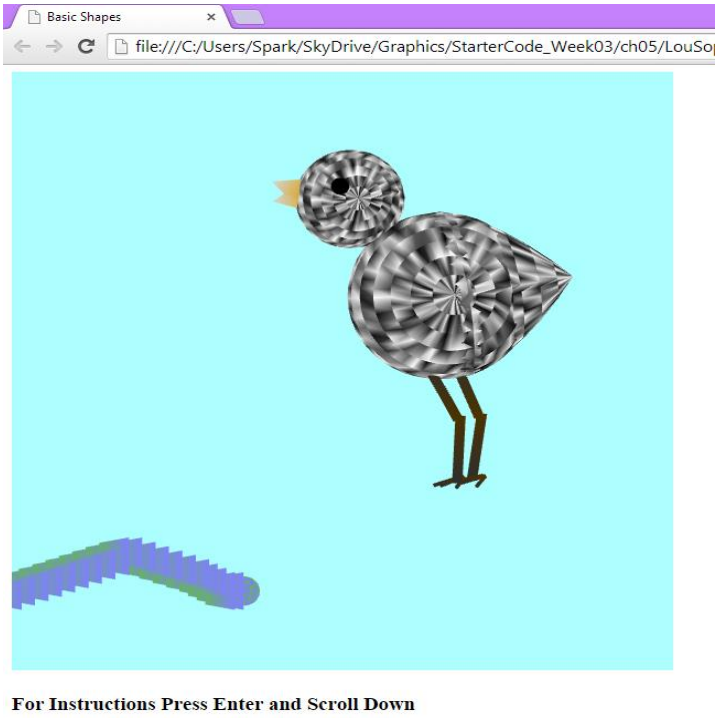


Figure 3: Caterpillar movement using left arrow key

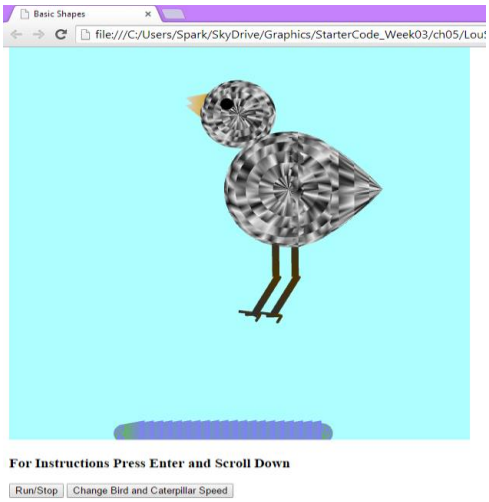


Figure 4: Caterpillar movement using down arrow key

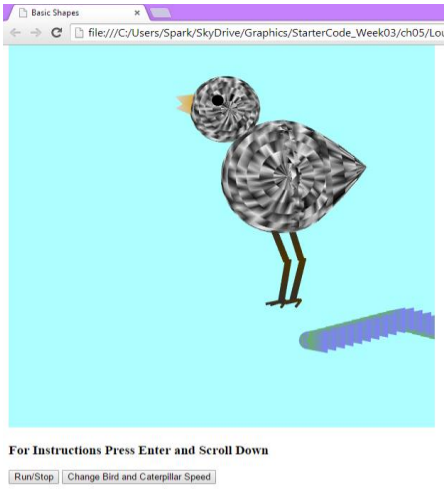
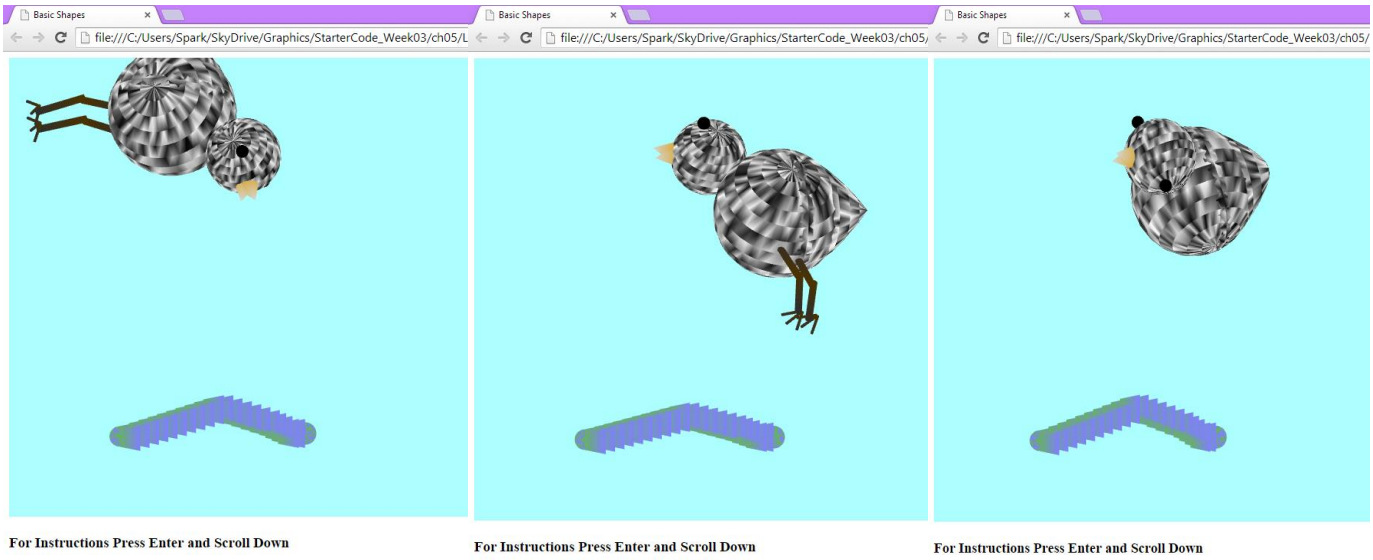


Figure 5: Caterpillar movement using right and up arrow keys

Mouse dragging is capable of rotating the bird around its head 360 degrees as illustrated in images on the next page.



Figures 6, 7, 8: Mouse dragging to rotate the bird