

Project A: Swinging with Stars

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A Brief Intro:

This project is intended to demonstrate application of concepts learned in EECS 351: Intro to Graphics. I make use of WebGL to draw and color basic vertex shapes and transform (translate, scale, rotate) these shapes into more complex arrangements by applying series of transformations with matrices.

I've created two objects here: a spinning multi jointed bent object with a star shaped end, and a swinging pendulum, that looks somewhat like a joystick upside down.

User Manual:

Instructions are displayed on the rendered index.html webpage as well.

The WASD keys move the bent object that starts on the bottom left (W moves up, A left, and so on) smoothly around on the canvas. Clicking on holding the mouse down freezes all movement; dragging the mouse around like this will allow you to rotate the bent object along both the X and Y axes. However, keep in mind that this will be from the perspective of the object itself.

Releasing the click changes the colors of every object on the canvas, and clicking the button below changes the background color.

Results:

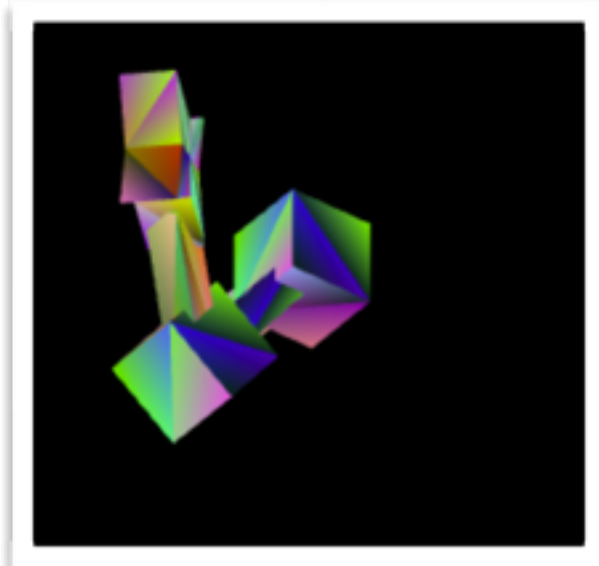


FIGURE 1. The “bent” object.

The first object I created (Fig. 1) consists of is built from a series of 5 rectangular shapes and one star (Fig. 2) on the end. The 5 rectangles are transformed to two distinct dimensions (cubes at joints, rectangular prisms elsewhere). The joints can turn freely around each other, and the star spins on the end of this structure.

The second object (Fig. 3) is placed on the top right. It was originally intended to be a morning-star type weapon, but has been changed to look like a rather dramatically swinging pendulum. The main body of the pendulum is affixed to a expanding and

shrinking spinning base. This main rectangular component swings slowly from side to side. The icosahedron is mounted on an extension out from the main body; together, these two swing further than the main body, much like you'd see if the extension was a chain or had an additional joint.

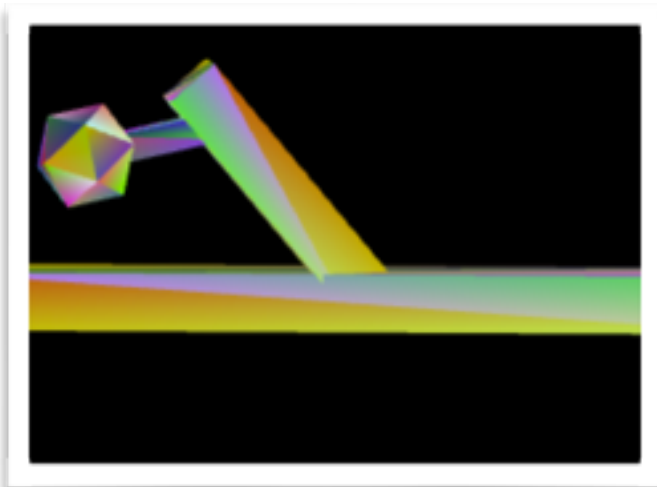


FIGURE 3. The pendulum object.

Here's a final sketch of the scene graph that I used to create this project! (Flg. 5)

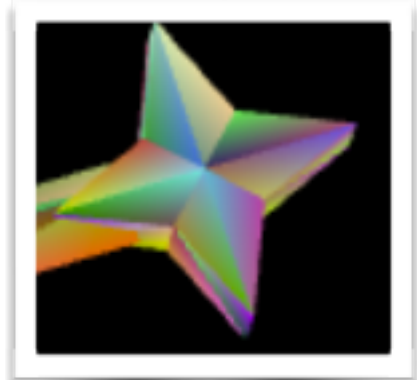


FIGURE 2. A close up image of the star.

All of the colors in the project are randomized per vertex, in addition to the changing background color to allow for more vibrant combos (Fig. 4).



FIGURE 4. The entire scene, with a new color scheme!

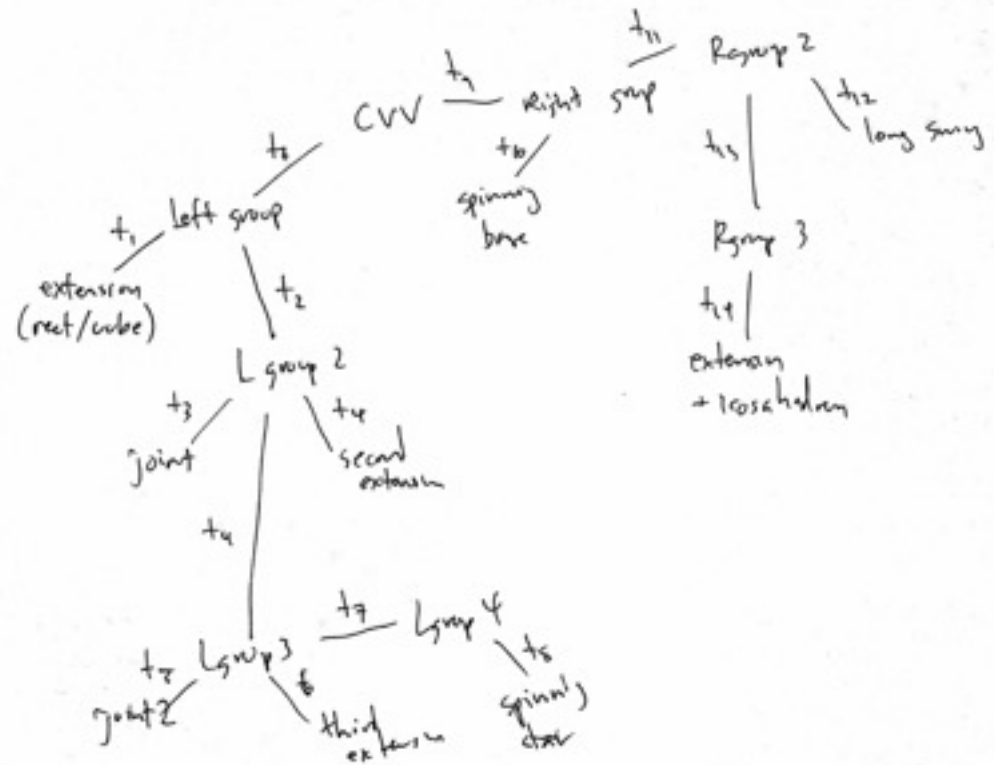


FIGURE 5. Scene graph.