CS 432 – Interactive Computer Graphics

Assignment 4 – Interacting and 2D Animation

Objectives:

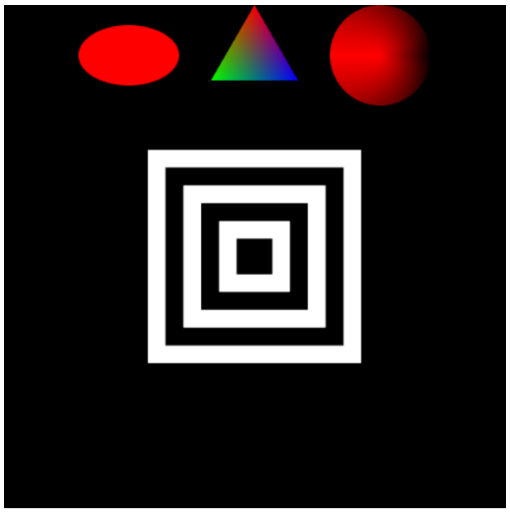
1. Change our codebase to utilize model matrices.
2. 2D Animation
3. Interacting via HTML5 elements (buttons, sliders).

Assignment

Part 1: Model Matrices

We'll start of HW4 by making a few modifications to our HW3:

1. Your vertex shader programs should now all have a uniform `mat3` variable for the model matrix. This matrix will be applied to the homographic representation of a 2D vertex. The `gl_position` variable is then set using the x and y coordinate of the transformed vertex.
2. Your classes should have a way to change the location, size, and angle of the object, and use that information to compute a 3×3 model matrix.
3. When drawing an object, you should pass/set the vertex shader's model matrix variable using the object's model matrix.
4. Your classes should now specify the vertices of their objects so that they're "generic". That is, centered in their own coordinate system with a logical default size.
5. And finally, create and set the model matrices for each of your objects in order to reproduce your HW3 image.



Part II: Animation

Now let's animate our objects!

1. Animate the black & white box so that it rotates counter-clockwise around its own center.
2. Animate the triangle so that it rotates clockwise around its own center.
3. Make the circle increase in size, then decrease in size as though it is "breathing".

Part III: Interaction

Finally, we'll add some HTML5 elements to your HTML file. In particular it should have:

1. A button - When clicked, this toggles the direction of rotation of the triangle and square.
2. A slider – This changes the speed of rotation and of the circle's "breathing".
3. Some text describing how to interact with the program.

What to submit?

Submit a single zip file containing all the files needed to run your code.

We should be able to extract your file, navigate to your directory, run an http server there and run your code in a browser.

Grading:

1. Objects are transformed using model matrices: 5pts
2. Objects are animated correctly 3pts
3. Button works correctly 1pt.
4. Slider works correctly 1pt.