

Exercise: transformations

Open the *WebGLApp* template and execute it with *Visual Studio Code*. You will see a green triangle appearing in the middle of the canvas, as shown in *Figure 1*.

Modify the provided code to generate the image shown in *Figure 2*. To do that, you will have to:

- Create a new variable to store the OpenGL buffer with the vertices of the quad object.
- Create the buffer and assigning vertex coordinates to it in *loadSceneOnGPU()*.
- Modify and add code in *drawScene()* to draw the several objects into the canvas.

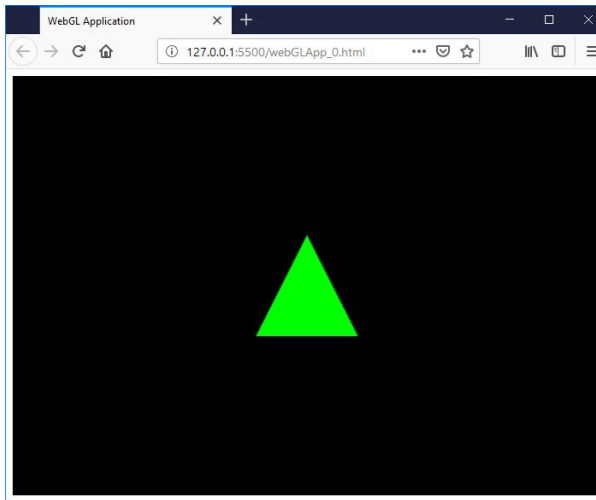


Figure 1. WebGLTemplate

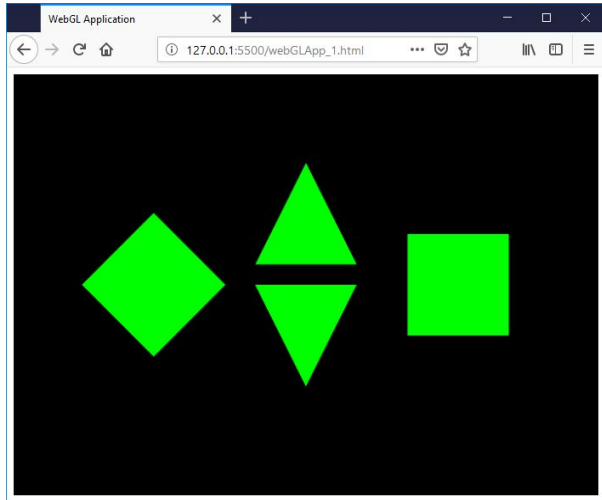


Figure 2. Modified WebGLTemplate

glMatrix functions

The following lines show some examples of common transformations you will need to use:

- Create a new 4x4 matrix:

```
var mvMatrix = mat4.create();
```
- Reset mvMatrix transformations to the identity:

```
mat4.identity(mvMatrix);
```
- Apply a translation to mvMatrix:

```
mat4.translate(mvMatrix, [0.0, 5.0, -5.0]);
```
- Apply a rotation of 45 degrees around the z axis:

```
mat4.rotate(mvMatrix, 3.1415 * 0.25, [0.0, 0.0, 1.0]);
```
- Apply an horizontal mirroring on mvMatrix:

```
mat4.scale(mvMatrix, [-1.0, 1.0, 1.0]);
```