CPSC 314 **Assignment 1** Due Mon Jan. 16, 2017

Introduction to Javascript and WebGL (2% of final grade)

The goal of this assignment is to familiarize yourself with basic Javascript and WebGL. You will see how vertices are stored in a WebGLBuffer object (sometimes called a *vertex buffer object (VBO)*, and how these are then used to draw an object. Note that when we use the `three.js` library in future assignments, the use of VBO's will be abstracted away, but they are still being used behind the scenes.

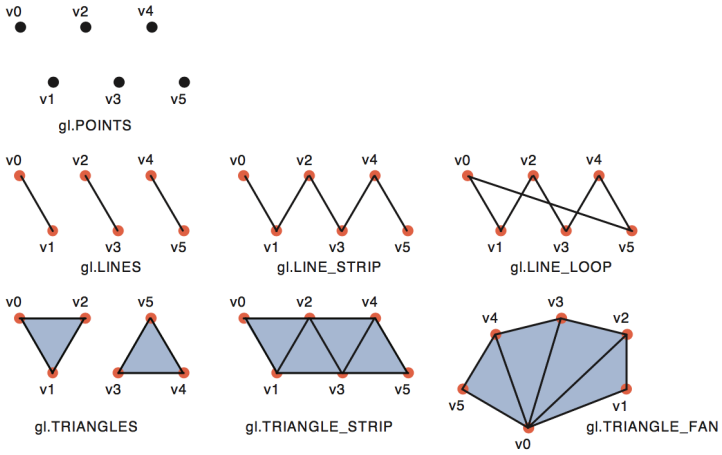
Copy and expand the zip file in a local "cs314" directory for this assignment:

```
cp a1.zip ~/cs314/a1.zip
cd ~/cs314
unzip a1.zip
cd a1
```

View your local version of `a1.html` to ensure that your web browser is properly enabled to run Javascript and WebGL. It should be an up-to-date HTML5 browser. Chrome, Firefox, and Safari all support WebGL.
Now walk through the following steps, and implement any requested changes. After each edit to `a1.html` or `animate.js`, you will want to reload `a1.html` in order to see the changed result. When introducting errors, fix the error before moving on to the next step. All other changes can be made in a cumulative fashion.

1. Understanding a basic WebGL program.
   (a) Change the window size to be 700×700 pixels. See the HTML file.
   (b) Open the console window and look for the "hello world" message. Change the code so that the console message reads "Assignment 1 (FOO)", where FOO is your name.
   (c) Attempt to print the result of a division by zero. What happens?
   (d) Attempt to use a variable name that does not exist yet. What happens?
   (e) Add a new variable using "var foo;" and then print it's value without first initializing it. What happens?
   (f) Change the background colour to be yellow.
   (g) Move the peak vertex of the house so that the roof is taller.
   (h) Add a `modelMatrix.scale(x,y,z)` transformation so that the house is twice as large.
   (i) Add a second pink copy of the house to the left of the original, with the help of a `modelMatrix.translate(x,y,z)` transformation and other code, as needed. Make this house red.

(j) WebGL/OpenGL comes with several basic primitive types, as illustrated here:



What happens when you change `TRIANGLE_FAN` to `LINE_LOOP`? `LINE_STRIP`? `TRIANGLE_STRIP`? Return to using `TRIANGLE_FAN` at the end.

(k) Turn off the animation, by calling draw() instead of animate().

(l) Use Math.random() to draw a third house that is located at a random x,y location on the screen, and drawn in a random colour. Reloading the web page will then produce a new random location.

Show your demo to a TA (either this week or next week) and submit your assignment by the deadline using:

```
handin cs314 a1
```