Lab 1

- The WebGL API
- Web browser and demos
- Simple examples: setting a viewport and its attributes
- User interaction and event-driven programming

1.1 Web browser and demos

Check if your browser supports WebGL and analyze some simple examples, for instance, from:

GetWebGL.org

WebGL Report

khronos.org – WebGL Wiki – Demo Repository

You can also analyze more sophisticated examples from:

5 Incredible WebGL Demos

9 Mind-Blowing WebGL Demos

9 More Mind-Blowing WebGL Demos

22 Experimental WebGL Demo Examples

30 amazing examples of WebGL in action

WebGLSamples.org

AIRTIGHT INTERACTIVE – WebGL Demos

Chrome Experiments – WebGL

1.2 First WebGL example

Analyze example **WebGL_example_01.html**.

Notice how the file contents are structured.

Modify the example so that the viewport size is now 200 × 200.

Set the background color of the viewport to red.

1.3 Changing the background color – Buttons

Analyze example **WebGL_example_02.html**.

Notice how the various buttons are instantiated and how a different action is associated with each button.

What happens if you remove the call to the **render()** function?

Add a new button to assign the color yellow to the background of the viewport.

1.4 Changing the background color – Dropdown List

Analyze example **WebGL_example_03.html**.

Analyze:

- How the **dropdown list** and its items are instantiated.
- The structure of the **event-listener** function.

Add a new list item to assign the color purple to the background of the viewport.

1.5 Changing the background color – Keyboard

Analyze example **WebGL_example_04.html**.

Notice how the event-listener function is structured.

Analyze how the textual description of the selected color is updated.

Modify the example:

- It should be possible to change the viewport background color to red, green or blue using the ‘R’, ‘G’ e ‘B’ keys.

1.6 Setting up more than one canvas

Analyze example **WebGL_example_05.html**.

Notice how:

- Two different canvases are defined.
- Each canvas is associated with a different WebGL context.

Modify the example:

- It should be possible to independently change the background color of each viewport.
- Avoid the existing code duplication by creating an array to store the WebGL contexts, and allow writing statements such as

```
gl_arr[idx].clear(gl_arr[idx].COLOR_BUFFER_BIT);
```

The array index identifying each context should become an argument to the `initWebGL` and `render` functions:

```
function initWebGL(idx, rgba, canvas);

function render(idx);
```