Interactive Graphics

Lab Session of April 11th 2017

Objective: Understand and Experiment with texturing in WebGL, use of buttons, menus and sliders

Background: knowledge of the theory behind the above topics, basic knowledge of HTML, Javascript and WebGL.

Tasks:

1. Download from the Course Web Site the necessary files in the Resources/Resources/Lab Sessions section: IG20170411.zip
2. Unzip on the Desktop
3. Open the file Lab20170411.html in a browser
4. Open the files Lab20170411.html and Lab20170411.js in a text editor (Notepad++ or similar)
5. Modify the image2 texture by creating a texture of the same resolution (texSize by texSize) but containing random values between 128 and 255. Use the javascript functions Math.random() that returns a value between 0 (included) and 1 (excluded) and Math.floor(x) that returns the integer part of x.
6. Add two sliders to control the minimum and maximum of the random values used in step 5.
7. Create a texture 256x256 that has maximum intensity in the center and decreases with the square of the distance from the center. Control the minimum and maximum values with two sliders. Use this texture to multiply the color of the fragment.
8. Create an octahedron (see figure) with a different color for each face. Animate the octahedron exactly like the cube of the example and apply the texture of point 7
9. Add to the example of point 8 the checkerboard texture and combine them.

References:

Course Web page https://piazza.com/uniroma1.it/spring2017/1044398/home

JavaScript Tutorial https://www.w3schools.com/js/default.asp

HRML5 Tutorial https://www.w3schools.com/html/default.asp

WebGL Book Material
http://www.cs.unm.edu/~angel/BOOK/INTERACTIVE_COMPUTER_GRAPHICS/SEVENTH_EDITION/

WebGL Programming Guide https://sites.google.com/site/webglbook/

WebGL official site https://www.khronos.org/webgl/

WebGL 1.0 specifications https://www.khronos.org/registry/webgl/specs/1.0/

GLSL specifications https://khronos.org/registry/OpenGL/specs/gl/GLSLangSpec.4.50.pdf