# Assignment 2 (Honours): Individual Program

This project write up is to show my understanding and knowledge of the graphics module.

I have created a 3D game called SuperSoccer. I have used the ThreeJS library once again but to show my understanding of the elements of the graphics module I have opted to NOT use blender and create everything from scratch.

## A basic introduction to ThreeJS and how it works with HTML5 and OpenGL.

## Three.js includes these important elements:

* Scene
* Renderer
* Camera
* Mesh
* Light
* Material

The scene is what is displayed on the browser. It defines the size of the window and is where all the elements are defined. See it as a main function where all the variables are defined.

**Renderer**

This is where the OpenGL libraries are called upon. The renderer can use many different libraries to render the graphics, but we chose the OpenGL renderer to do this instead.

**Camera**

This defines where the graphical view.

**Mesh**

This is where the object is created and all the normals and attributes are defined. It is also where animations of the object can be added.

**Light**

This is where different lighting effects can be defined and added. It is defined by the position, and different lighting effects can be added. You can also use the uniform variable to create new lighting effects.

**Material**

These are used to define how the object uses shaders and is how the textures are created and rendered.

**Implementation**

I will talk through how I implemented my code and highlight the elements of the module that I have applied.

HTML Document

Firstly, as I am using the ThreeJS library and OpenGL with the HTML5 canvas, I need to create a index.html file in which I can use as a container for the application.

It creates a HTML5 canvas in which the ThreeJS library can run in.

**Libraries**

I imported the keyboard.js and ThreeJS.min libraries.

The keyboard.js file allows me to call upon it and be able to get input from the users keyboard.

The ThreeJS.min is a minified library file.

**Game.js**

This is the main file where everything is coded. I deliberately kept all the code in the one file to highlight that I used the graphics pipelining method.

ThreeJS doesn’t use the conventional structure, although it can be broken down like this:

* Create Scene
* Create Renderer
* Create Camera
* Define materials (shaders/textures)
* Define Meshes(Objects)
* Define Lighting
* Game Mechanics

The structure of this file roughly resembles this structure.