CS543 Project 2 Design & Implement Documentation

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# LSystem

LSystem is implemented in file code\LSystem\LSystem.js.

There are a function named *LoadLSystemFile* and a class named *LSystem* in the file.

The function *LoadLSystemFile* was added as an event of HTML file component. In the function, I use FileReader class to open file stream and parse the string stream to get rules described in this file. After read all the information from the file, it creates a *LSystem* instance and generates the final string after certain number of iterations.

In the *LSystem* class constructor, I use a FOR loop to iterate certain times. During each iteration, the current command string will be replaced according to the rules given by the file. The rules are stored as a string, in which the first character is the character to be replaced, and the rest part of string is the replacement. To read the string, you can use *finalString* which is a public variable of the *LSystem* class.

# PolyCylinder

The PolyCylinder is implemented by 4 classes, *Mesh*, *Sphere*, *Cylinder*, and *PolyCylinder*.

The *Mesh* class stores vertices, normal, colors and indices information and could dump vertices, normal and colors to vertex buffer by member function *DumpToVertextArray* for rendering.

The *Sphere* and *Cylinder* classes are two classes for building spheres and cylinders. They derive from *Mesh* class with additional variables to describe the properties of the primitives. To use those two classes, you can create a new instance, and then call *DumpToVertextArray* which is defined in their parent class, to update vertex buffer. Then for each rendering pass, call *gl.drawArrays( gl.TRIANGLES, sphere.startIndex, sphere.vertexNum )* to render. The *startIndex* and *vertexNum* are two member variable from *Mesh* class to record its location in vertex buffer.

The class *PolyCylinder* has a sphere and cylinder defined as member variable. In its constructor, it takes a list of points as input. For each pair of consecutive point, it will render a cylinder to connect the two points and followed by a sphere with same radius.

