Project 4 – Textures

In this assignment, I understood how to add color for a mesh with texture.

What you have implemented & How to use your implementation:

Step 1: Load an image and generate a buffer for it:

In my project, I use the lodepng library to decode a png file and save it as a texture. My implementation is:

//Decode the png file:

```
lodepng::decode(image, width, height, material.map_Kd.data, LodePNGColorType::LCT_RGB);
```

//Generate a buffer and bind the file as texture:

```
glGenTextures(1, &Texture_Brick_ID);
glBindTexture(GL_TEXTURE_2D, Texture_Brick_ID);
glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MAG_FILTER, GL_LINEAR);
glTexParameteri(GL_TEXTURE_2D, GL_TEXTURE_MIN_FILTER, GL_LINEAR);
glTexImage2D(GL_TEXTURE_2D, 0, 4, width, height, 0, GL_RGB, GL_UNSIGNED_BYTE, image.data());
```

//In my render function:

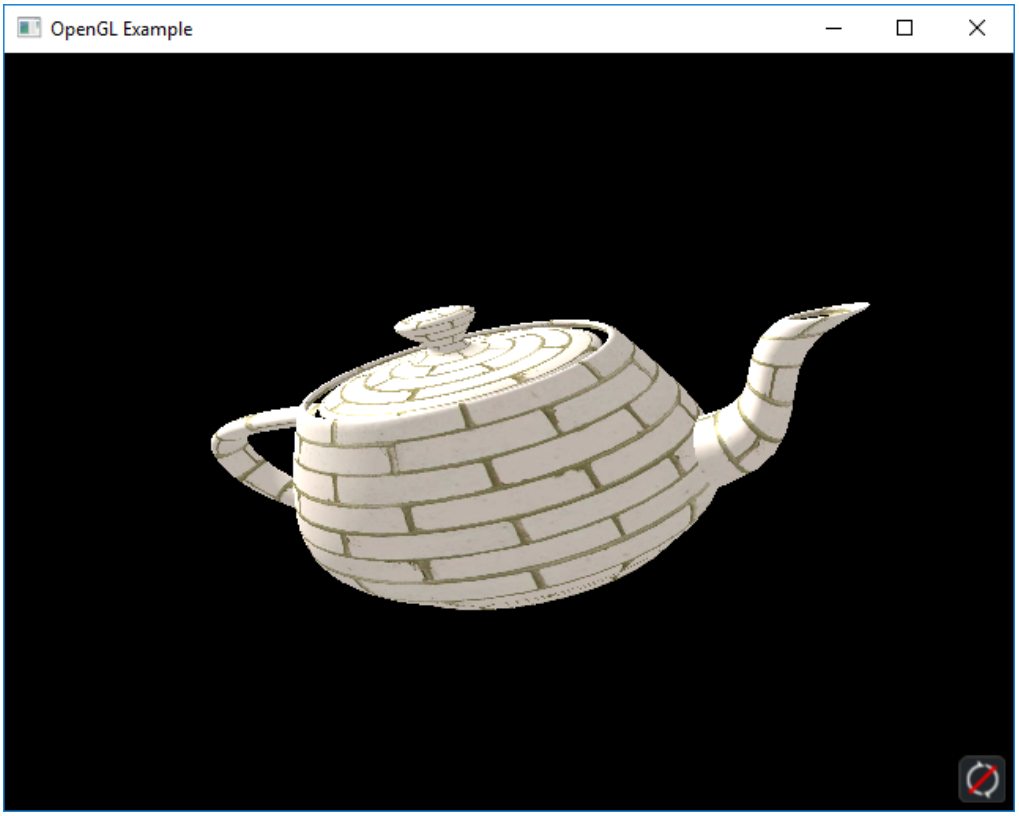
```
glActiveTexture(GL_TEXTURE0);
glBindTexture(GL_TEXTURE_2D, Texture_Brick_ID);
```

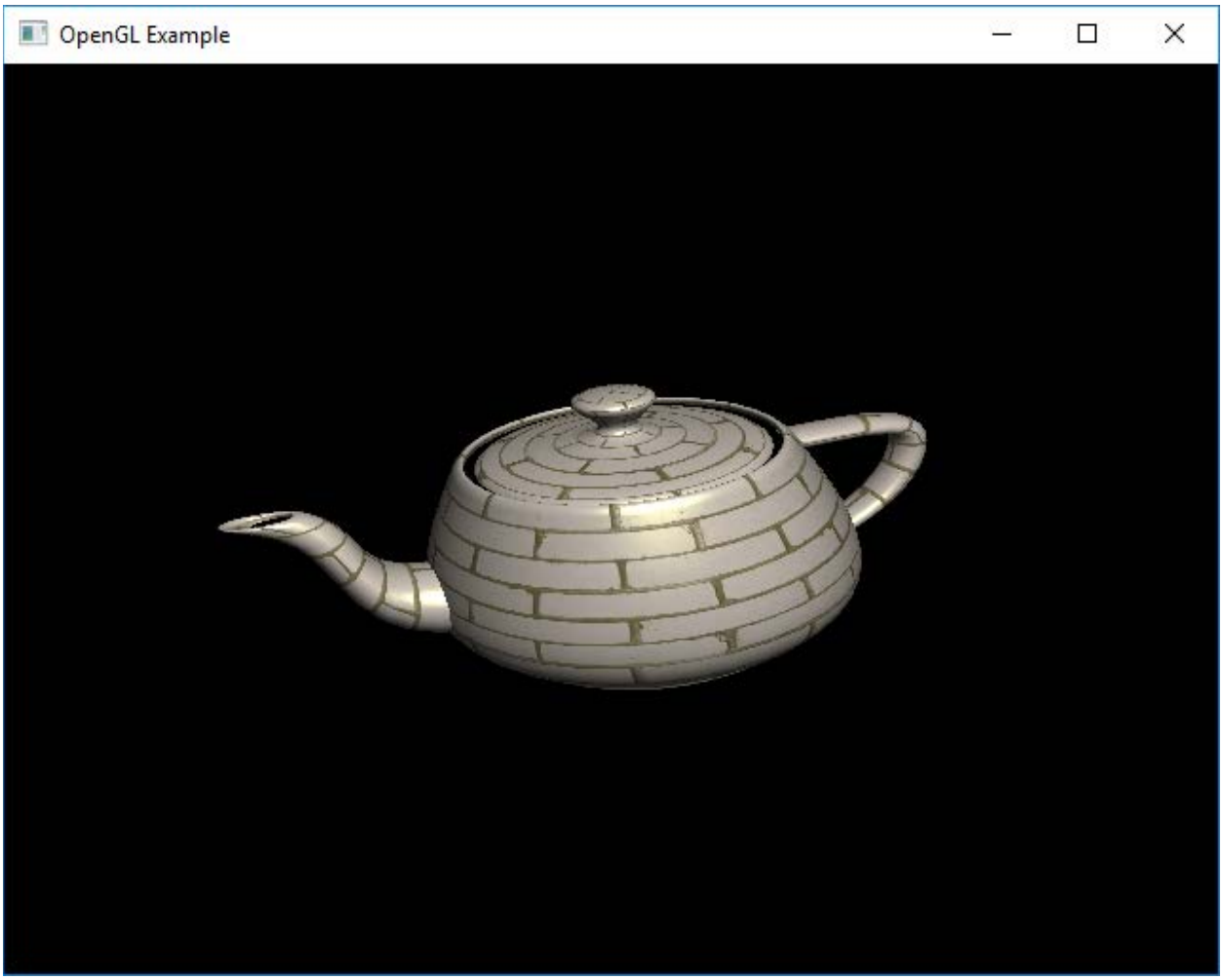
Step 2: UV coordinate:

In this project, I decided to save my vertex information (vertex position, normal vertex, and UV) in my VertexData class. I iterator each faces in the mesh, save the vertex data in a buffer, and pass into my vertex shader. Now the UV is available in my vertex shader and can be passed into my fragment shader to do the texture mapping.

Step 3: Display the object with texture:

Finally, we can update our diffuse color with texture and UV coordinate, and the texture should be correctly displayed on the object.





What you could not implement:

None

Additional functionalities beyond project requirements:

None

What operating system and compiler you used:

I work and compile my code in Visual Studio 2017 in Windows 10.

External libraries and additional requirements to compile your project:

cyCodeBase

GLEW

LodePNG

Ref:

http://www.cemyuksel.com/cyCodeBase/index.html

http://www.opengl-tutorial.org/

http://lodev.org/lodepng/