CS6610 PROJECT 6 – Environment Mapping
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Implemented features:

All the requirements as well as the additional requirements for CS6610 listed in the Project 6 has been implemented.

1. A *background* was set: Created the cube, mapped the 6 images onto the cube and on rotating the camera, an illusion of the environment is obtained.
2. The *reflection* of the environment was obtained on the teapot. Rotating the teapot changes the reflection on it.
3. I have also applied Blinn shading to the teapot.
4. A plane with reflection of the environment was placed below the teapot.
5. Render-to-texture method was used to draw the reflection of the teapot on the plane.

Using the above implementations:

CTRL + Left mouse button: Rotates the light around the teapot object.

Left mouse button: Hold the left mouse button down and drag the cursor to change the camera angle (rotation) for the teapot and to move around the environment.

ALT + Left mouse button: Hold down the ALT key followed by the left mouse button (and drag the cursor) to change the camera angle (rotation) for the plane.

ALT + Right mouse button: Hold down the ALT key followed by the right mouse button (and drag the cursor) to change the camera distance (zoom-in and zoom-out) for the plane.

OS Used: Windows 10

IDE: Visual Studio 2013

Libraries and dependencies:

All the libraries used in the project are included under the *lib* folder within the zip file. They include: opengl32.lib, glu32.lib and freeglut.lib

All the header files are included within the GL folder contained in an include folder within the zip file. They have been included as *#include <GL/gl.h>*, *#include <GL/freeglut.h>, #include<GL/vmath.h>, #include<GL/glfw3.h>* in the code. All the header files from cyCodeBase recommended for use are included in the cyCodeBase folder in the same include folder that holds the GL folder. The lodepng.h and lodepng.cpp files required to load the PNG images are present in the imageLoader folder of the include folder.

All the DLLs required are placed in the Debug folder of the zip file. The source code itself was created and compiled in Visual Studio and is available as *main.cpp* in Shading folder along with the solution.

The executable is available in the Debug folder.

Requirements to compile the project:

Unzip the project zip file and open the solution in Visual Studio.

In the properties of the project, link to the libs, dlls and header files. Make sure to choose “All configurations” in the properties window before adding the dependencies.

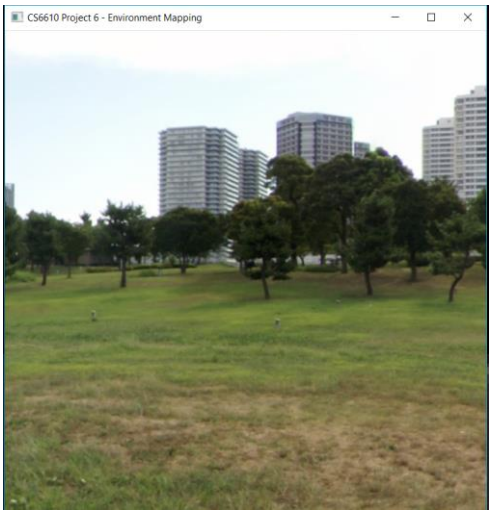
As mentioned earlier, all the required libraries, dlls and header files are available in the lib, Debug and include folders respectively of the zip file.

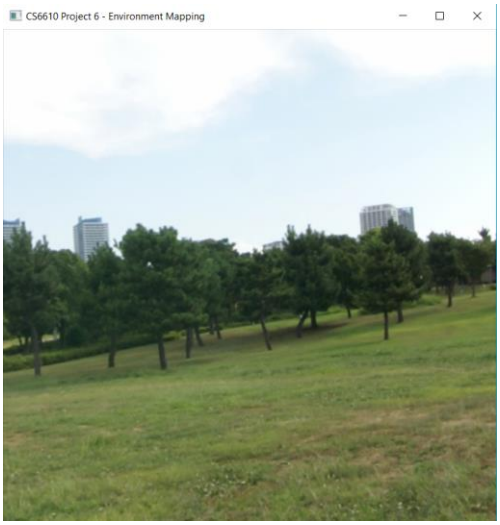
Add the *_CRT_SECURE_NO_WARNINGS;* to the preprocessor additional requirements in the project properties.

Please let me know if there is any issue in running the code.

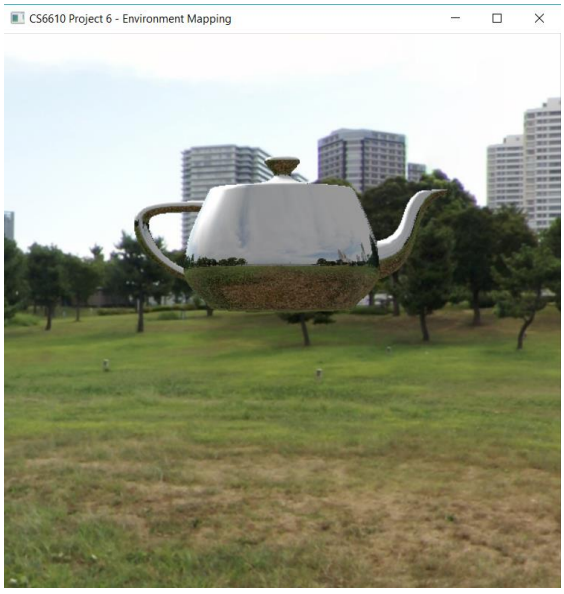
Screenshot of output:

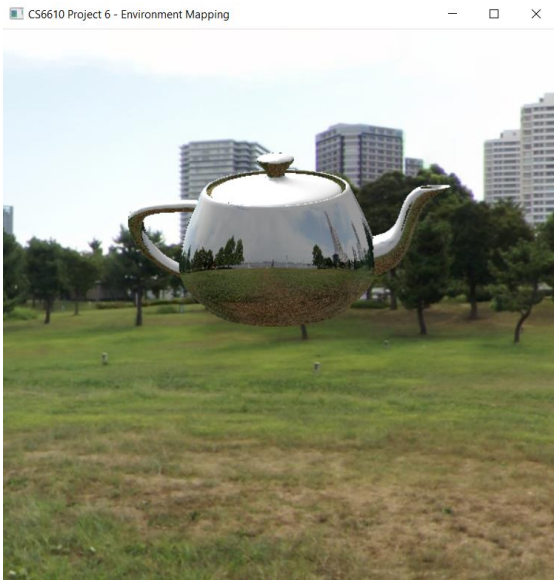
Cubemap:





Teapot with reflection and blinn shading:





Plane with environment reflection:

Plane with just the teapot texture (render to texture)

Entire scene: Environment, teapot with reflection and shading, plane with reflection and teapot reflection: