**Project 5 – Render Buffers**

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| **Name:** | Mukunth Balaramachandran Srinivasan |
| **uNID:** | u1467270 |

**What’s implemented?**

*All requirements implemented.* Rendered teapot.obj to a texture (a plane with a constant color) and implemented rotate, and zoom in/out for both the plane and the object. As instructed, ALT + left click is set to rotate the plane and ALT + right click is set to zoom in/out.

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| Fig 1. Different plane orientations (ALT + mouse click) | | |

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| A screenshot of a computer  Description automatically generated |  |  |
| Fig 2. Different object orientations (mouse click) | | |

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| A screenshot of a computer  Description automatically generated |  |  |
| Fig 3. Different light orientations (CTRL + click) | | |

**What could not be implemented?**

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**Additional functionalities**

**Previous projects’ functionalities:**

* Left mouse button to rotate and right mouse button to zoom in/out (click and drag).
* Centering the object on the window based on its boundary values.
* Re-compiling shaders on pressing F6 key.
* Ctrl + left mouse button to rotate the light source.

**How to use implementation?**

g++ main.cpp lodepng.cpp -o main -lfreeglut -lglu32 -lopengl32 -lglew32

This command will generate the output file “main” (“main.exe” in Windows) in the working directory. This command includes the GLEW 32-bit linker. I didn’t use an IDE and had all the libraries and headers globally installed, so I didn’t have to use -I and -L tags to specify paths to headers and DLLs. Place “lodepng.cpp” file in the same directory as the “main.cpp” file.

**All texture maps, .obj files and .mtl files are expected to be in the same directory as the executable file.**

The folder structure for the headers in include is as follows:

-> include

-> GL / all FreeGLUT and GLEW headers

-> cyCodeBase / all cyCodeBase headers

-> lodepng.h

**OS and Compiler**

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| *Operating System* | Windows 11 (x64) |
| *Compiler* | g++ |

**External libraries and additional requirements**

Apart from FreeGLUT, GLEW, cyCodeBase and LodePNG have been used for this implementation.