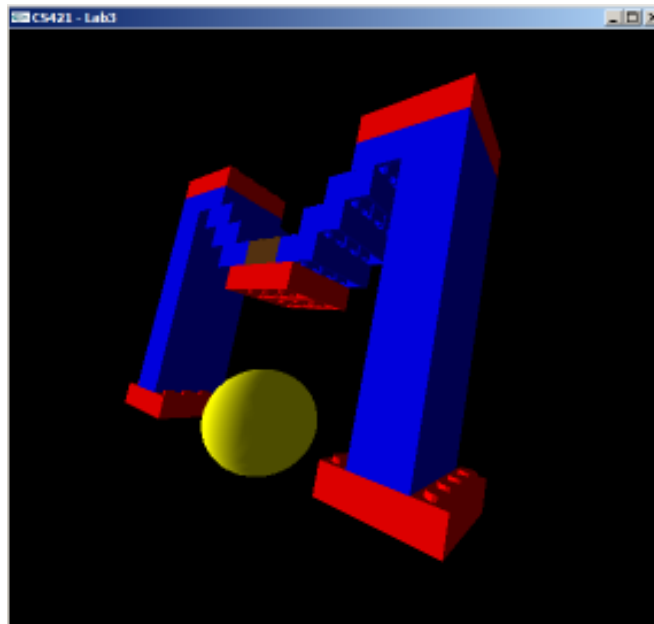


Milwaukee School of Engineering
CS421 – Advanced Computer Graphics
Lab 3 – Lighting

Student: Marek Handl
Date: January 2007

➤ Screenshot



➤ Implemented functionality

There are multiple Lego bricks placed so they create a character M and there is also a sphere, which makes lighting effects more visible.

One ambient light and one positional light is used.

Perspective and view volume is defined by `glFrustum` and `glLookAt` methods.

The whole object can rotate, the light can change its position automatically. Using mouse it is possible to change the `LookFrom` and `LookAt` coordinates.

➤ Controls

All characters have to be lower case.

q – quit the program

r – reload the input file

a – start/stop animation – rotation of the model

l – start/stop light animation – rotation of light's position about models center

x – enable/disable rotation about x-axis

y – enable/disable rotation about y-axis

z – enable/disable rotation about z-axis

While holding down the left mouse button and moving horizontally, the LookFrom point z-coordinate is being changed – works as zoom function.

While holding down the right mouse button and moving horizontally and vertically, the LookAt point x a y coordinates are being changed. This effect is a bit harder to get because it is not the same as panning.

➤ Extra features

- display list is used for efficiency
- the model can rotate automatically
- the light can rotate about model automatically
- zoom in/out

➤ Problems

I was not able to make specular part of light working. Once I changed the diffuse light to black the light had no effect at all.

➤ Files

Whole program is in *main.cpp*.

Lego.cpp is used to create Lego bricks.

stdafx.cpp is used to include some standard libraries.

Source file used to build something from multiple Lego bricks is *data.dat*.