PA10 Pinball Instruction Manual

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CS 480-680 Computer Graphics

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Sections

Overview

Dependencies

For operating systems to run this project, installation of these five programs are required:

GLEW (http://glew.sourceforge.net/)

GLM (http://glm.g-truc.net/0.9.7/index.html)

SDL2 (https://wiki.libsdl.org/Tutorials)

Assimp (http://assimp.sourceforge.net/main_downloads.html)

ImageMagick (https://sourceforge.net/projects/imagemagick/)

Bullet (https://pybullet.org/wordpress/)

This project uses OpenGL 3.3. Some computers, such as virtual machines in the ECC, can not run this version. In in order to run OpenGL 2.7 follow the instructions at:

https://github.com/HPC-Vis/computer-graphics/wiki/Using-OpenGL-2.7

Extra Credit

Plunger intensity changes depending on how far back it is pulled. A spotlight follows the ball with the ability to change its radius and intensity. The game keeps track of the top 10 scores with the option for the player to enter a new score into the database if it is higher than any of the 10 scores already in it. Lastly spotlights light the cylinders/bumpers when the ball collides with them.

User Manual

Build Instructions

This project was built and run using cmake in Linux/Ubuntu. To run the application enter the following in the PA10 directory:

```
mkdir build
cd build
cmake ..
make
./PA10
```

Keyboard Inputs

Pinball Controls

Space (hold)	- use plunger
Right Shift	- use right flipper
Left Shift	- use left flipper
R	- reset game

Lighting Controls

F	- use per fragment lighting
V	- use per vertex lighting

T	- increase specular light of the ball
Y	- decrease specular light of the ball
U	- increase specular light of the flippers
I	- decrease specular light of the flippers
O	- increase specular light of the bumpers
P	- decrease specular light of the bumpers

N	- increase ambient light
M	- decrease ambient light

J	- increase the size of spotlight
K	- decrease the size of spotlight
Z	- increase the brightness of spotlight
X	- decrease the brightness of spotlight

Camera Controls

,	- top down view
.	- front view
/	- back view
WASD	- move camera
Q	- zoom out camera
E	- zoom in camera

Figures

Figure 1: Screenshot of a front view of our pinball table

Figure 2: Screenshot of the splash board

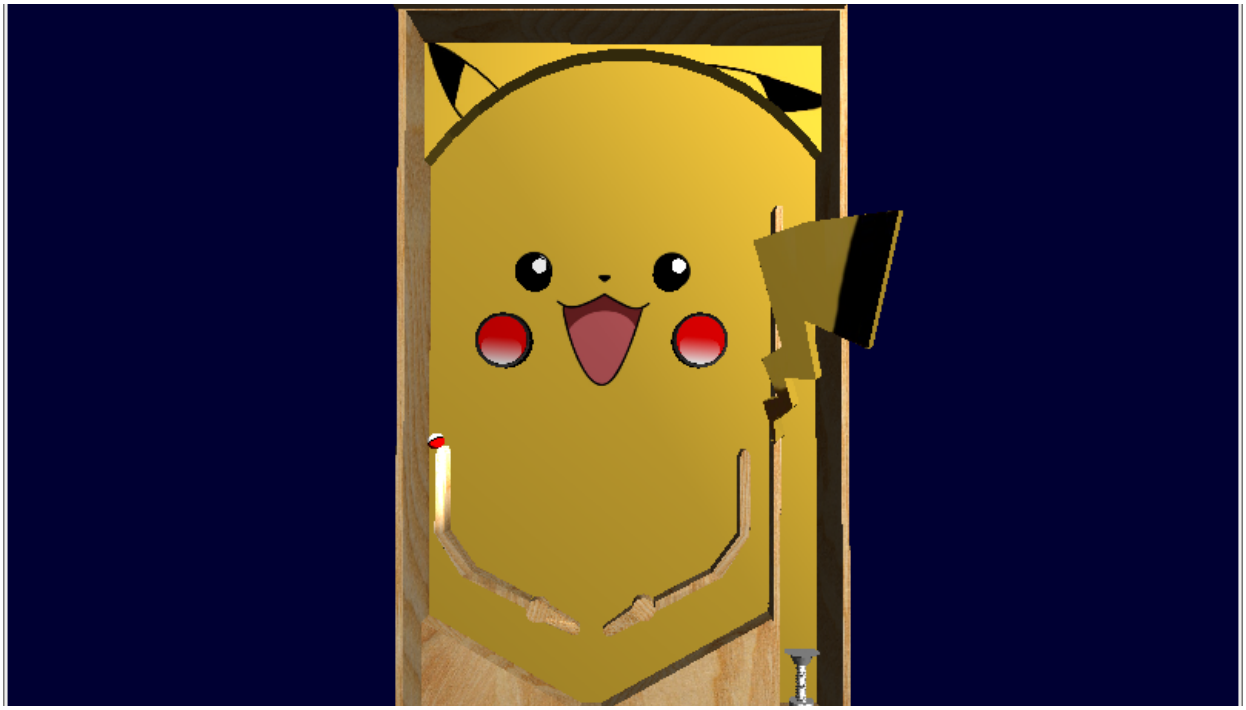

Figure 3: Screenshot of the pinball table with per-vertex lighting

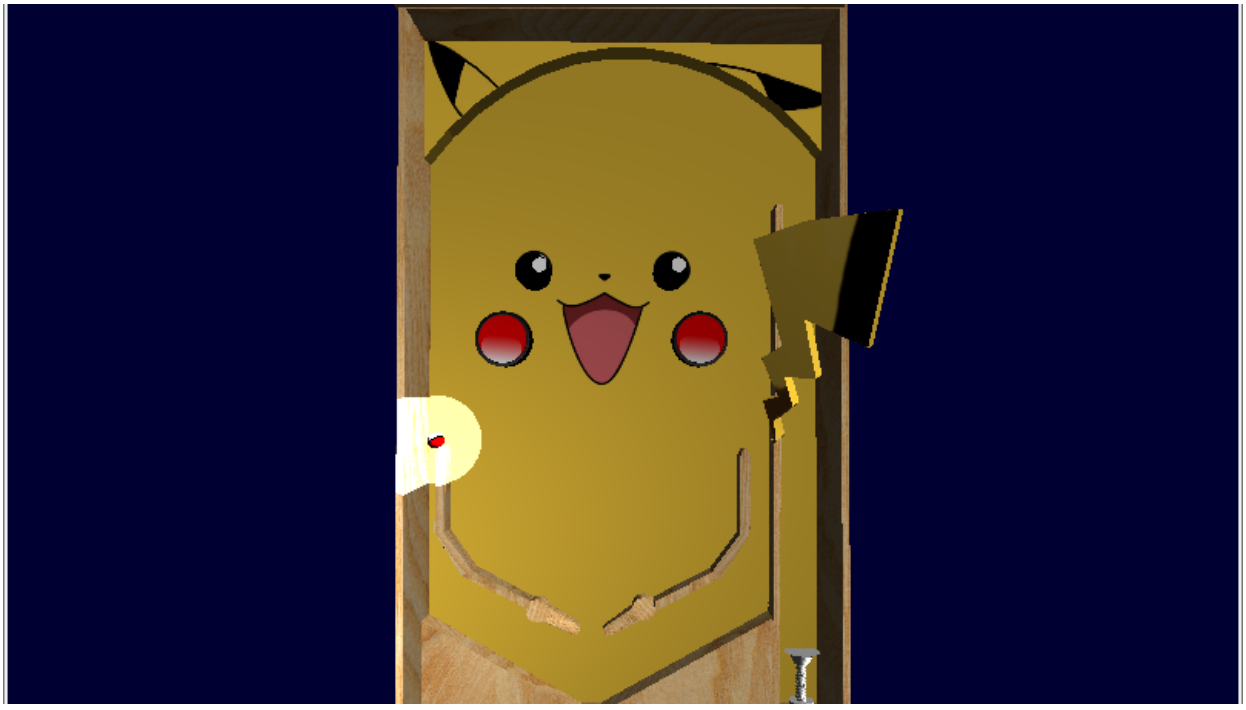

Figure 4: Screenshot of the pinball table with per-fragment lighting

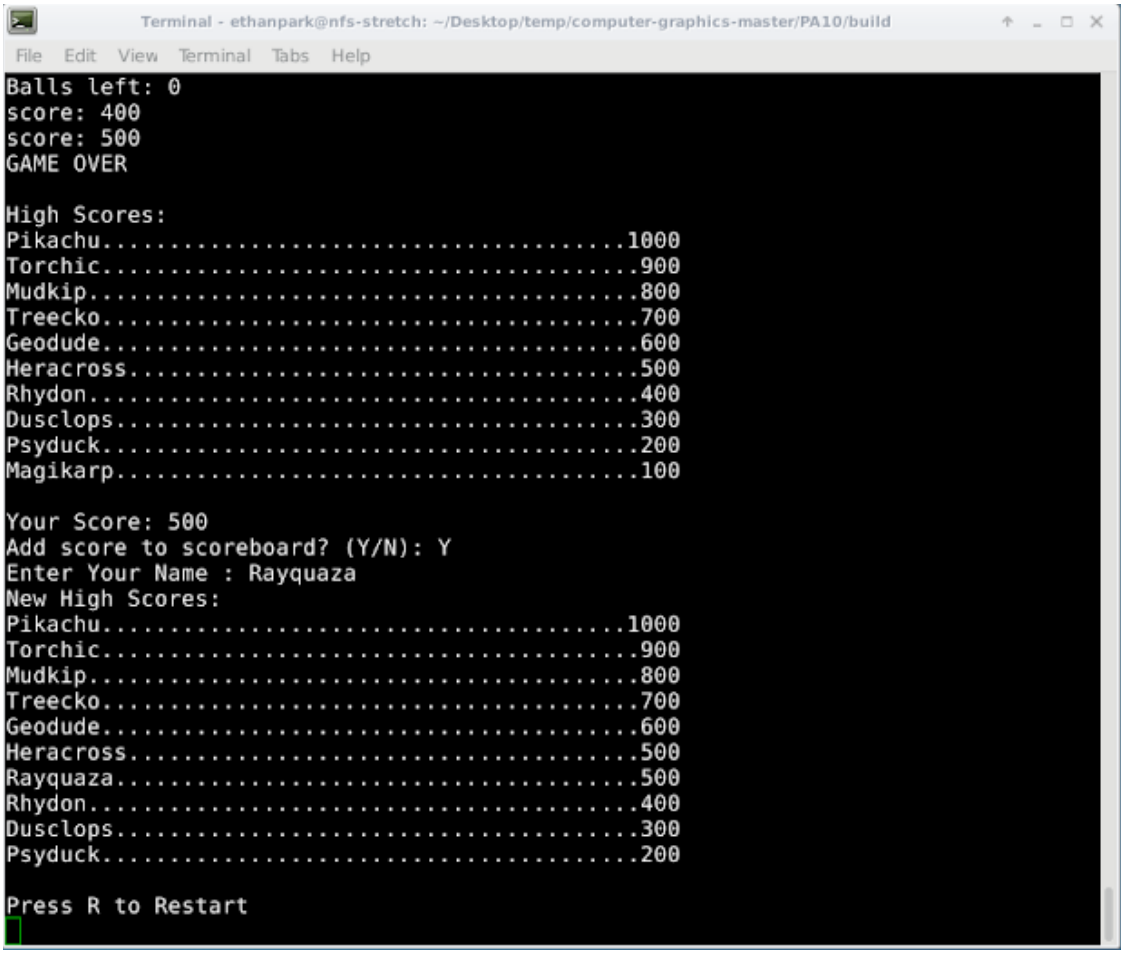

Figure 5: Screenshot of game over state and top 10 scoreboard

Technical Manual

Issues

Overall, there were not many major issues in the creation of this pinball table. One small issue was time constraints as the Engineering Computing Center was closed for Veteran's Day weekend meaning that the majority of the group could not work on the project for a large portion of the time allotted to work on it. As a result, the project was somewhat rushed, resulting in some aspects of the project that could be improved.

Things we would have done different

One thing we could have done differently is plan more efficiently. If we would have accounted for the Engineering Computing Center being closed for Veteran's Day weekend we could have started the project earlier to negate the lost time this caused.