

PA11 Mini Golf Instruction Manual

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CS 480-680 Computer Graphics

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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>

User Manual

Build Instructions

This project was built and run using cmake in Linux/Ubuntu. To run the application enter the following in the PA11 directory:

```
mkdir build  
cd build  
cmake ..  
make  
./PA11
```

Keyboard Inputs

Golf Controls

Space (hold)	- use club
Right Arrow Key	- rotate club right
Left Arrow Key	- rotate club left
1-3	- go to corresponding hole
~	- go to next course
R	- reset score (only available when hole is cleared)
+	- increase fan speed
-	- decrease fan speed

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 windmills
I	- decrease specular light of the windmills
O	- increase specular light of the club
P	- decrease specular light of the club
G	-increase specular light of the gates
H	-decrease specular light of the gates
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

Figures

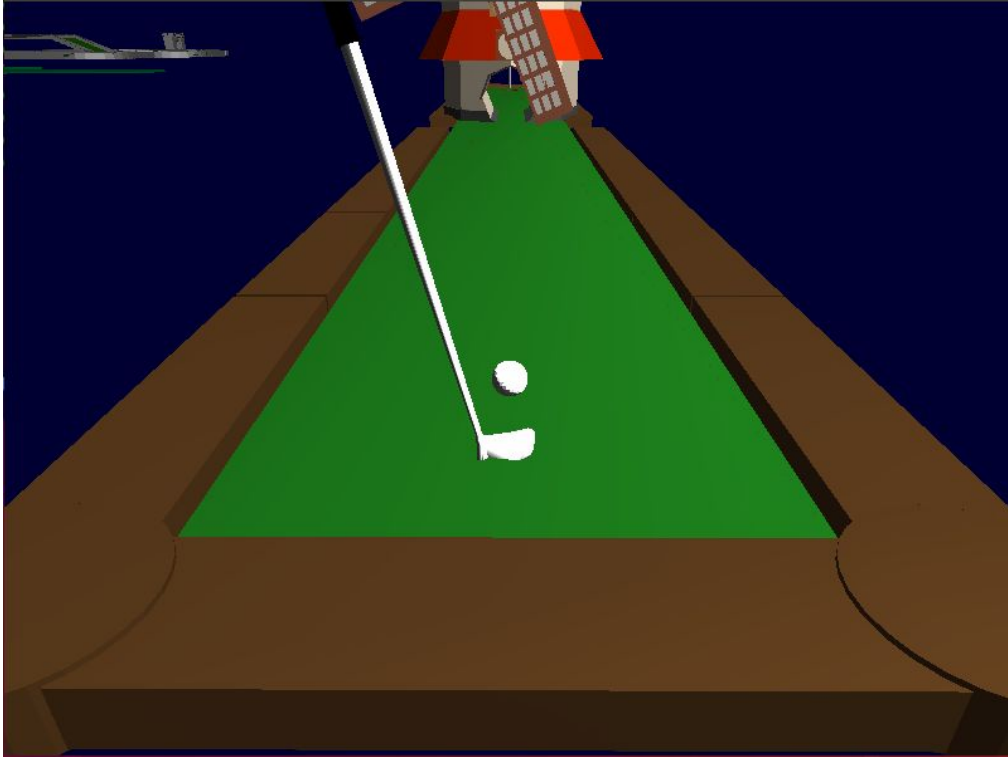


Figure 1: Screenshot of course one of the game.

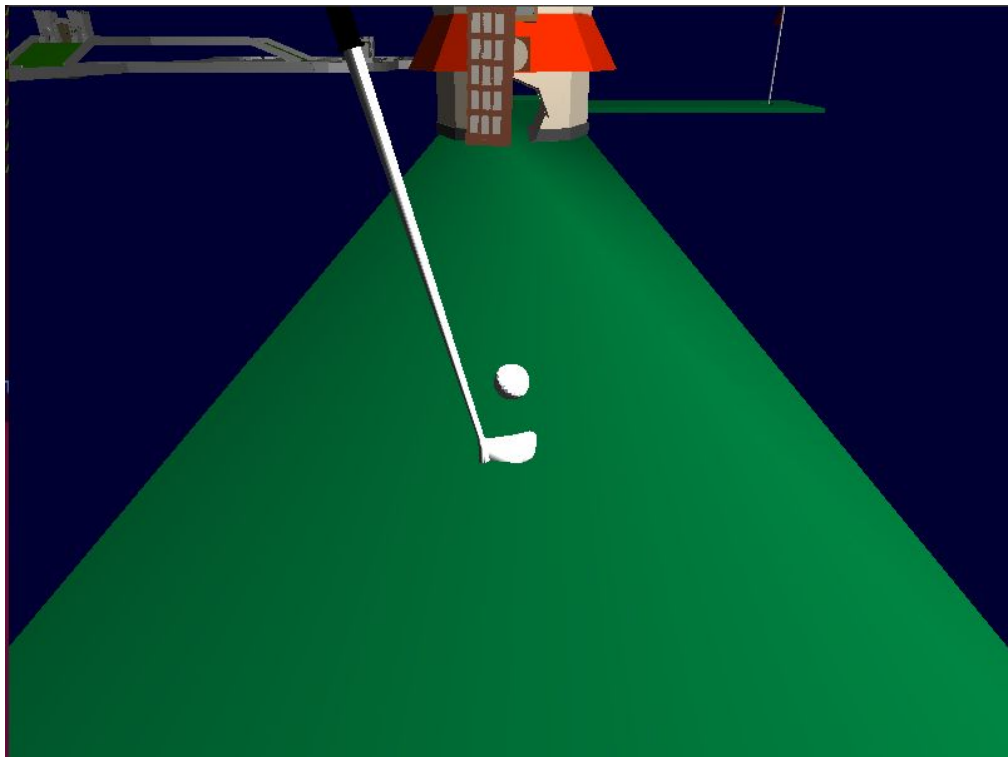


Figure 2: Screenshot of course two of the game.

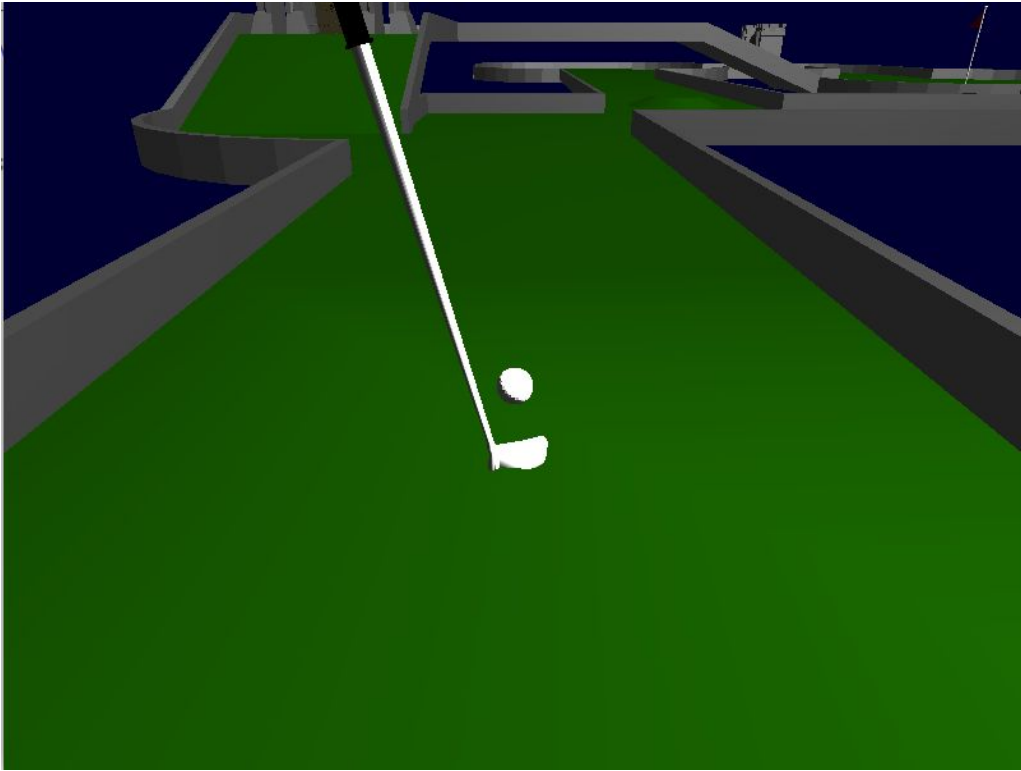
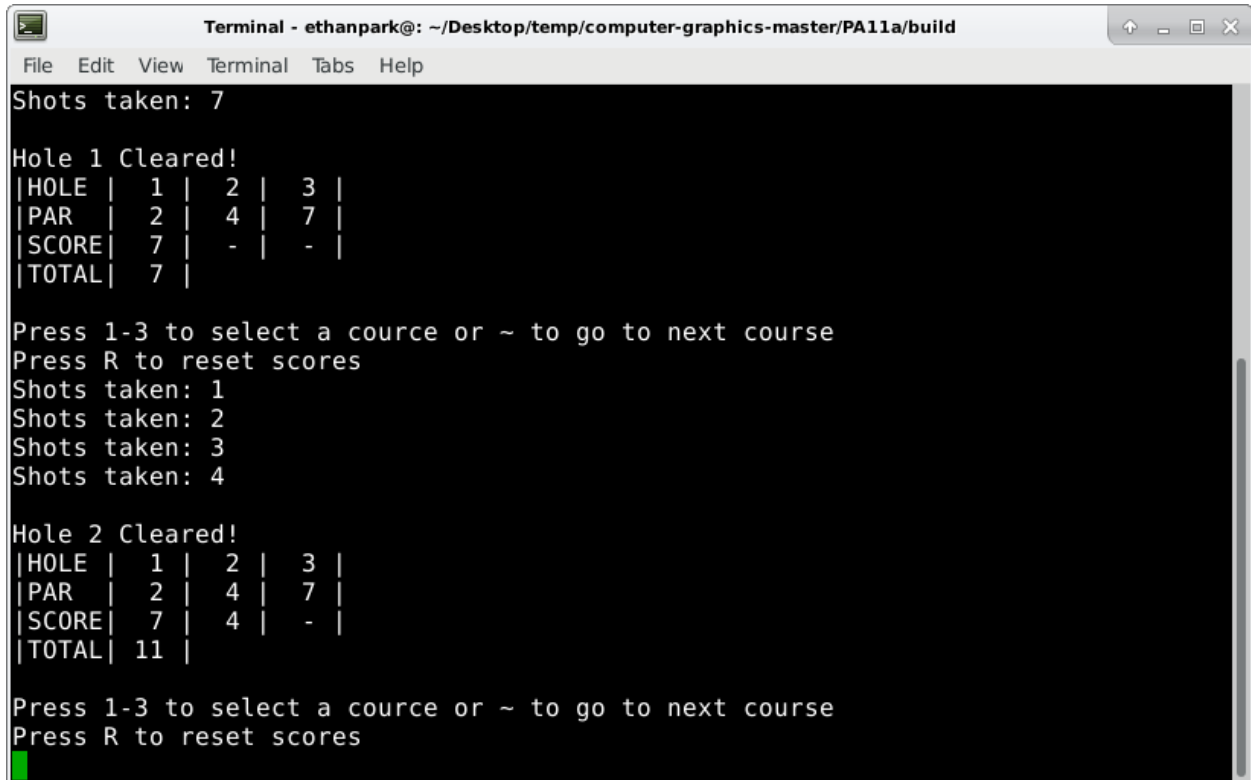


Figure 3: Screenshot of course three of the game.

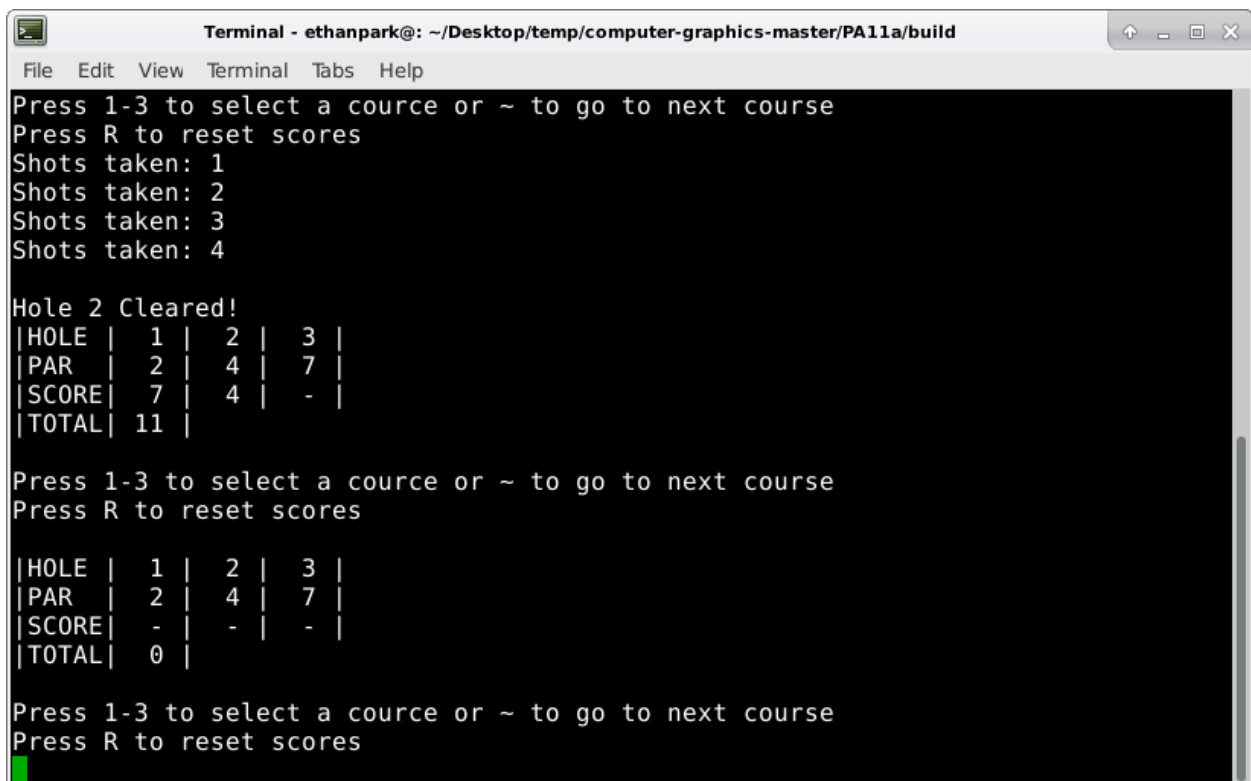


```

Terminal - ethanpark@: ~/Desktop/temp/computer-graphics-master/PA11a/build
File Edit View Terminal Tabs Help
Shots taken: 7
Hole 1 Cleared!
|HOLE | 1 | 2 | 3 |
|PAR  | 2 | 4 | 7 |
|SCORE| 7 | - | - |
|TOTAL| 7 |
Press 1-3 to select a course or ~ to go to next course
Press R to reset scores
Shots taken: 1
Shots taken: 2
Shots taken: 3
Shots taken: 4
Hole 2 Cleared!
|HOLE | 1 | 2 | 3 |
|PAR  | 2 | 4 | 7 |
|SCORE| 7 | 4 | - |
|TOTAL| 11 |
Press 1-3 to select a course or ~ to go to next course
Press R to reset scores

```

Figure 4: Screenshot of Score Card.



```

Terminal - ethanpark@: ~/Desktop/temp/computer-graphics-master/PA11a/build
File Edit View Terminal Tabs Help
Press 1-3 to select a course or ~ to go to next course
Press R to reset scores
Shots taken: 1
Shots taken: 2
Shots taken: 3
Shots taken: 4
Hole 2 Cleared!
|HOLE | 1 | 2 | 3 |
|PAR  | 2 | 4 | 7 |
|SCORE| 7 | 4 | - |
|TOTAL| 11 |
Press 1-3 to select a course or ~ to go to next course
Press R to reset scores
|HOLE | 1 | 2 | 3 |
|PAR  | 2 | 4 | 7 |
|SCORE| - | - | - |
|TOTAL| 0 |
Press 1-3 to select a course or ~ to go to next course
Press R to reset scores

```

Figure 5: Screenshot of Score Card after reset.

Technical Manual

Issues

Overall, there were not many major issues in the creation of this Mini Golf game. The biggest difficulty was getting the club to work right. We first had to figure out the way bullet calculates angles and returns them which was not easy to work with. Then manipulating those angles to rotate the club properly was difficult because the angles bullet uses are not ideal for that.

Things we would have done different

One thing that we could have done different is spent more time on adding to the playability of the game. For example, it is somewhat difficult to tell the exact trajectory that the ball will take when aiming the club. This could be remedied by adding a line that goes from the ball to the direction the ball will travel depending on the position of the club.