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PA 11: Pool Game

CS 480: Computer Graphics



Team Members:

RANDY GONZALEZ
BRETT KNADLE
PHILLIP VONG

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Overview

The pool game will consist of models and texture loading with a uniform theme using Assimp. It includes lighting such as turning up and down ambient lights, turning up and down specular lighting then switching between per vertex and per fragment lighting. The bullet library implemented for proper collision detection, gravity for the balls, and pool stick. The game allows 2 players, and applies the same rules as a regular pool game. Basic game logic includes being able to restart the game, as well as being able to tell the difference between a striped ball and a solid ball. The terminal displays the ball when a ball goes in the hole.

Extra Credit:

- 1) Other: Beautiful models and textures correlate with the room environment.

User Manual

Compile Instruction:

- cd PA11
- mkdir build
- cd build
- cmake ..
- make
- ./Pool

Controls:

- 'left arrow'----- Move Pool Stick to Left
- 'right arrow' ----- Move Pool Stick to Right
- 'space'----- hit the ball
- 'o'----- Restart Game

Views:

- 'u' ----- reset view
- 'q'----- increment X value on camera
- 'w'----- increment Y value on camera
- 'e'----- Increment Z value on camera
- 'r'----- Decrement X value on camera
- 't'----- Decrement Y value on camera
- 'y'----- Decrement Z value on camera

Lighting:

- 'f'----- Increment specular Light
- 'd'----- Decrement specular Light
- 's' ----- Increment Ambient Light
- 'a'----- Decrement Ambient Light
- 'p'----- Switch between Shader Lighting



Fig 1: The pool game start screen.



Fig 2: Display to terminal when a ball goes into a hole.

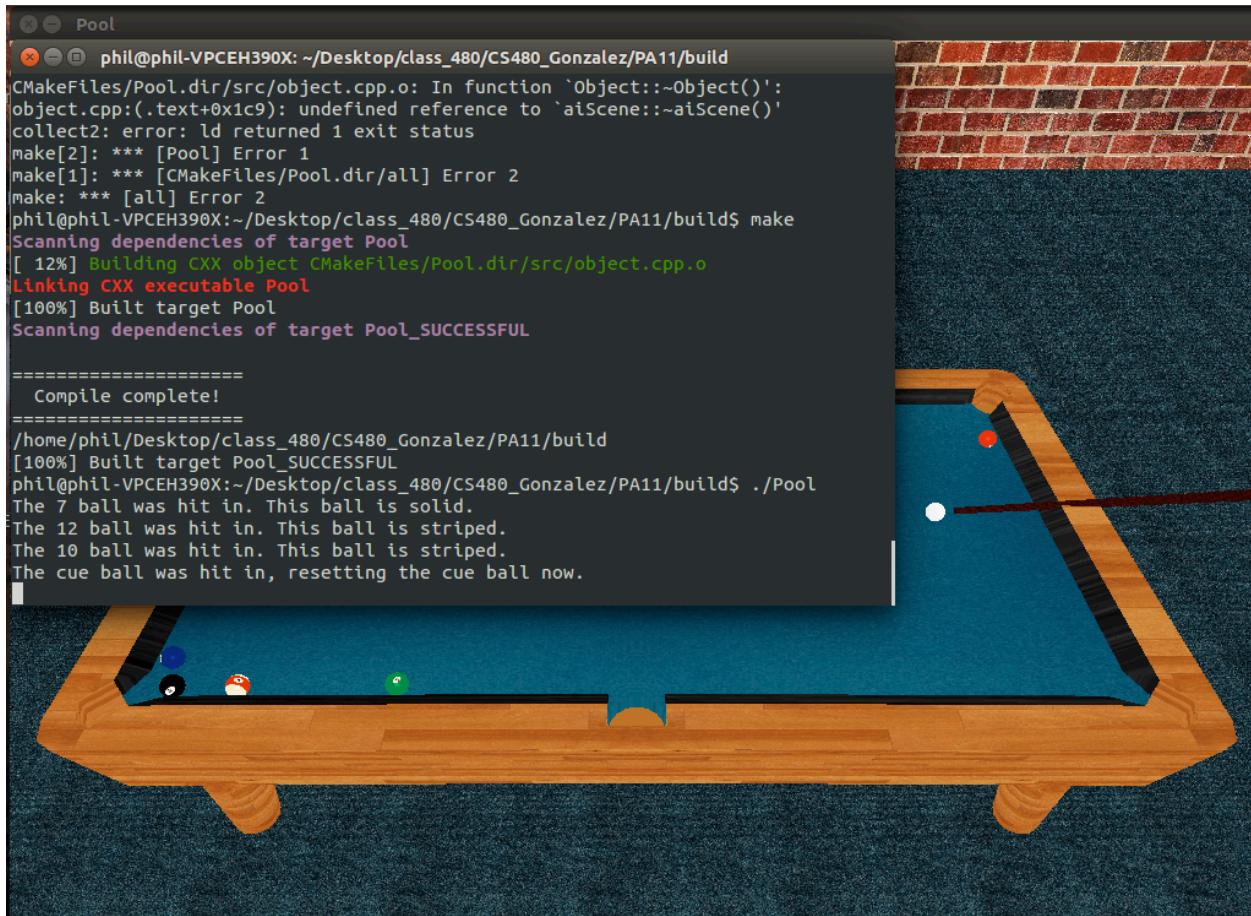


Fig 3: When a player scratches, the game resets the cue ball to initial position.



Fig 4: 'a' button – Decrements Ambient Lighting

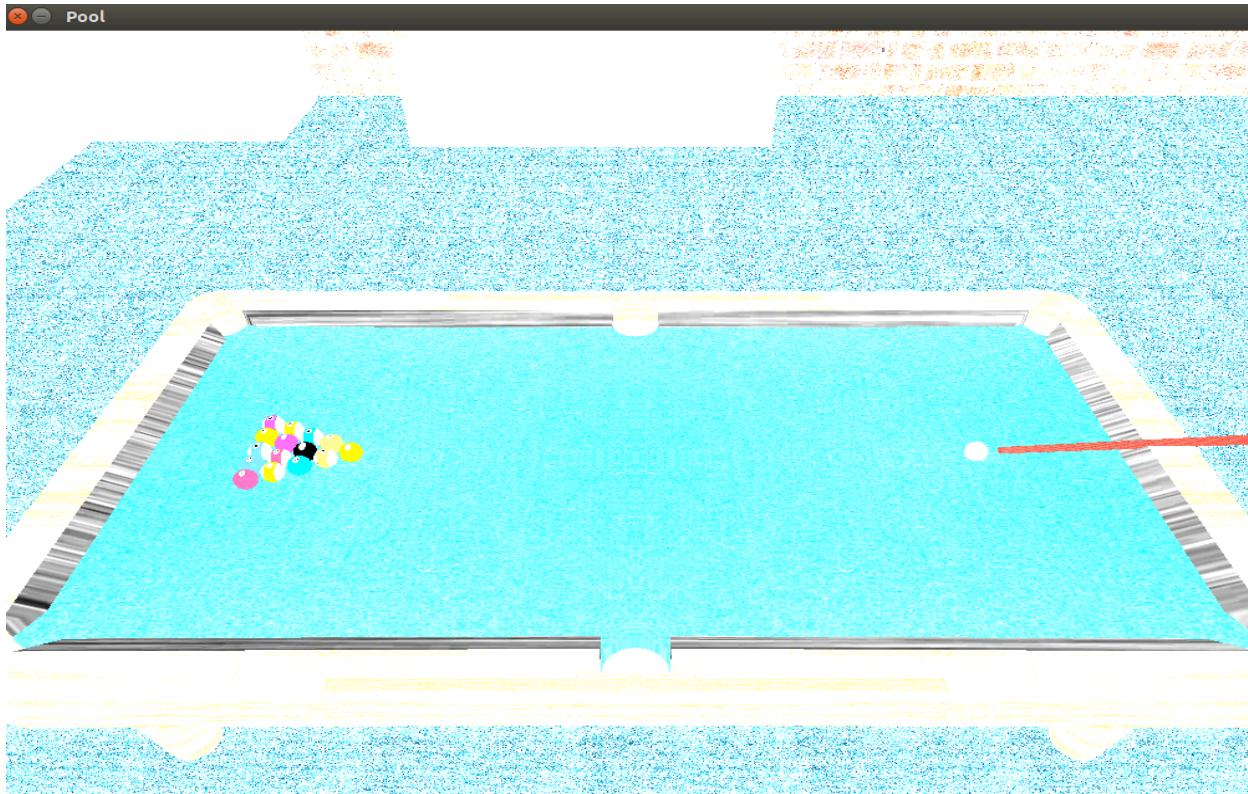


Fig 5: 's' Button – Increments Ambient Lighting



Fig 6: 'd' Button – Decrements Specular Lighting



Fig 7: 'f' Button – Increments Specular Lighting

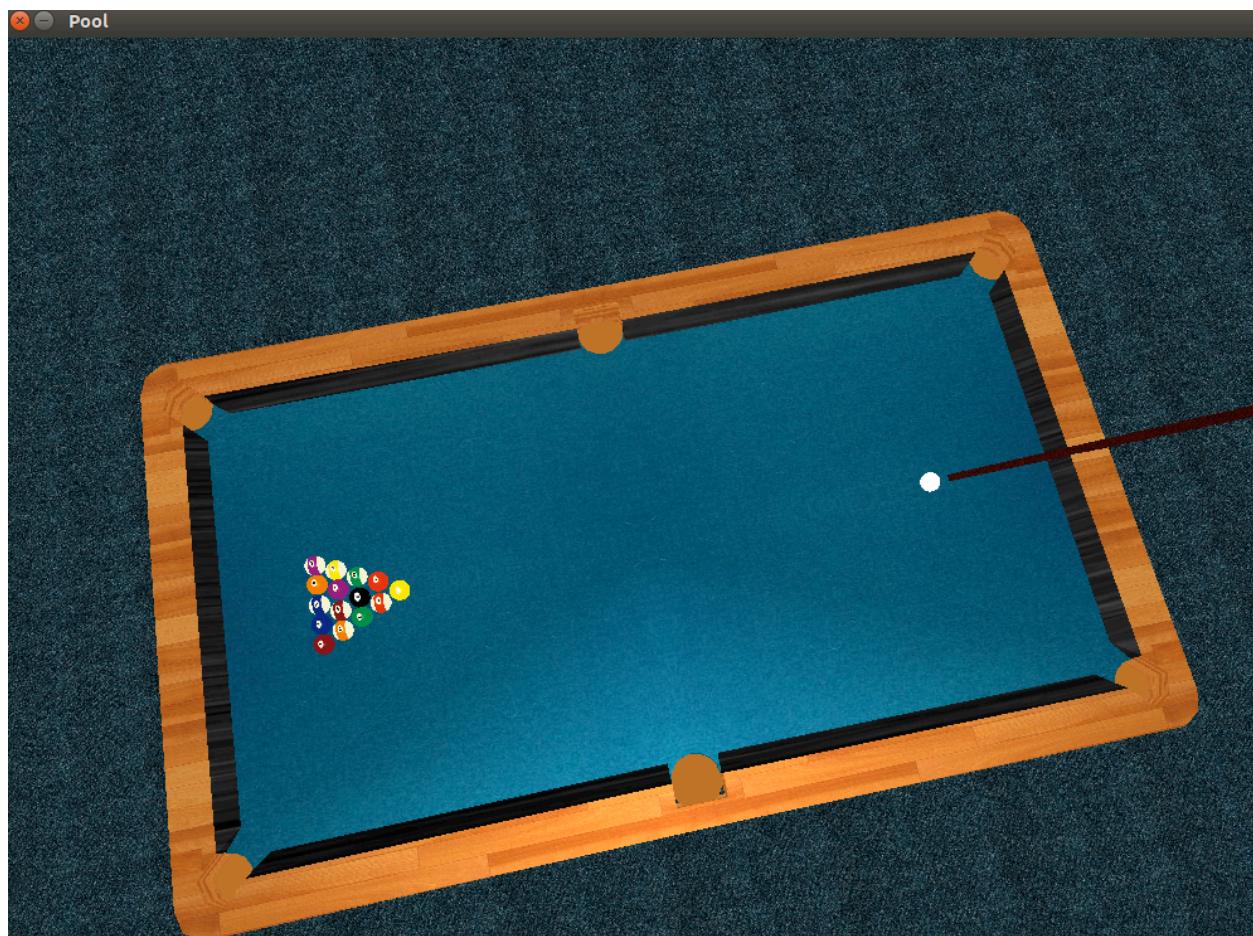


Fig 8: Top down view

Rules:

- 2 players game, player 1 start first then player 2.
- Solid or striped balls decided by whoever gets the first ball in a hole (For example if player 1 gets a striped ball in they are now stripes)
- When a player hit the cue ball in the hole then the turn will be the next player and the cue ball is reset to start position
- When a player hit the black 8 ball in the hole without putting all of their other balls in first then that player will lose the game.
- Winner is the player who puts all of their balls in and then finishes it off with the black 8 ball at the end.

Tech Manual

Issues

- 1) Spotlight doesn't work.

Things to do differently in the future

- 1) Better understand of light calculations
- 2) Displaying more information to the user as in who's turn it is
- 3) Different intensity velocity for hitting the cue ball
- 4) Display to screen instead of terminal
- 5) Adding spotlight to follow cue ball

Changes (modified) since the last push

- 1) Added more solid, striped balls, and a room environment.
- 2) Added scoring system
- 3) Added more textures to the pool game
- 4) Modified pool game logic
- 5) Added lightings features
- 6) Moveable camera views