Introduction

This project is a game called pong created using C++. The goal of the game is to use the provided rectangular paddle to hit the ball back to the other side of the screen. If the ball hit the other side of the screen without a paddle colliding with it points will be awarded to the respective player. The game has a user input which is the user mouse and two computer-controlled object which is the CPU paddle and the ball.

Motivation

The motivation for this project was having the ability to apply a lot of the skill I’ve learned from other Computer Science and this Computer Science course. This was my first time making an application/game with pictures and windows. Usually, the program we write is outputted using the terminal instead of it being shown on the screen. I’ve been playing games since I was little and so the fact that I had the ability to make a simple game was exciting. This is a project I’ll be working on even after the class because there is some feature, I want to add to the game that I didn’t have the ability or time to at the moment. I think I choose a good game for this project because Pong wasn’t a super hard game to create, but it definitely took a lot of researching and testing for the program to run correctly with all libraries required. This is easily the hardest project I’ve worked on in school and was definitely one of the most enjoyable one. The only downside to the project was openGl and SOIL wasn’t really talked about in class so a lot of the usual had to be learned on the spot.

Methodology and Implementation

The program was written using C++, the window and the rendering of the program was written with the API GLUT, GLU, GLFW3, and GLEW. These API help us access the functions in openGl which is the engine that creates the windows and renders all the picture and object that was coded. I used SOIL for loading texture and applying them to the object I created. I selected a soccer ball as the pong ball and selected baseball bats are the paddle for the game. The background of the program is a grass field. These were all implemented with the code glTextCoord2f which will accept the coordinate of the texture and show them on screen. The texture was stored in the variable Gluint texture. The collision of the ball was created using the conditional statement where if the top of the ball reaches the top of the screen, the speed at which it moves vertical will be reduced and inversed, which will simulate a collision effect. The opposite is done with the bottom of the screen and sides with the respective variable reversed. The rendering and moving of the ball is handled by changing the coordinate of the ball and rendering the ball again once the coordinate change to simulate a moving effect. There is 4 parameters to the ball object being top, bottom, left and right. And I added the x and y speed to these parameters to move the ball. The x and y speed is controlled by the collision system and speed of the game. The paddle of the computer is controlled by a random function mixed with the ball’s coordinate. This way the ball can also miss the ball due to the random function instead of being able to hit the ball all the time. The paddle of the player is controlled by the mouse position and the coordinate is changed the same way as all the other objects. Score is stored in a variable and increase when one player hits the ball, and the other didn’t. Once the score reach 5 points for neither player the game will end and the window will close.

Outcome

The program came out nice, the collision system worked and the score system works. It took me a long time to get the collision system working with the computer paddle because the detection had to be opposite for some of the parameter due to the paddle being at the top of the screen instead of the bottom. The texture loaded by SOIL has some flaws, the texture is reversed down the middle but I’m not sure why that is happening. For my first game I think this project was interesting and I can’t wait to spend more time on it to make it better and have more feature.

Conclusion

In conclusion, this is a project that at first, I thought I would dread coding because everything seemed super difficult. But after looking at guides online for openGL and the respective API the project got a little easier, and it was interesting coming up with ways to make things work. And this is the first real “Application” I coded, and after I was done it felt amazing. I couldn’t believe I got it done. The game Pong was a great first project for me in term of difficulty and fun. And I hope that this won’t be the last game I code in the future.