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Pinball Machine Summary

Overview:
I implemented a miniature version of a pinball arcade game. With a soccer theme, the objective is to use flippers to knock a ball into the goal, or other point scoring locations. In the middle of the field, a goalie shifts side to side, acting as an obstacle between the flippers and the goal. There is also a led matrix flashing in the middle of the board to add visual effect. Navigate the LCD display, using the joystick to start the game or view high-score. Pull back and release the plunger to bring the ball into play. The game will end when you run out of credits.

User Guide:
- Navigate the LCD display with the joystick to start game or view the top high-score
- Use a Bluetooth LE compatible app or the joystick to control the flippers
- Set desired number of credits with the Bluetooth app
- Launch the ball into the field by pulling back the plunger to bring the ball into play
- A goal is worth 500 points, the holes closest to the goal are worth 100 points, and the furthest holes from the goal are 50 points
- Play until you run out of credits

Technologies Used:
- Atmel Studio 7.0
- Solenoids (flippers)
- Relays (control solenoids)
- Stepper motor (goalie)
- IR sensors (score detection)
- Bluetooth LE 4.0 Module (for UART communication between micro controller and iPad)
- LED matrix (lights)
- Joystick controller (navigate LCD Display and control flippers)
- LCD Display(provide a user interface)
- 24 V Power Supply (to power solenoids)

Link To Video:
https://youtu.be/MoPGx8JMldQ

Link To Source Files:
https://github.com/tristanzickovich/Pinball/tree/master/src

File Descriptions:
- main.c – used solely to compile
- lcd_code.c – controls the LCD Display, joystick, Bluetooth module, solenoids, and IR sensors (uc 1)
- stepperMotor_code – controls the stepper motor and LED Matrix (uc 2)