Arcade Basketball Game
ECE 153B Final Project
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Overview
For our project, we plan to create a miniature arcade basketball game. In our implementation of the game, the length of a single game will be sixty seconds. In that amount of time, the user will try to score as many baskets as possible. The user will press a start button which will begin the game. A sensor will be used to detect when a basket has been made. The amount of time remaining and the score that the user accumulated will be sent to an LED display. After thirty seconds have passed, we will use two motors to cause the backboard to move forward, backward, and in the left and right direction.

Peripherals
- Joystick
- 8x32 LED Matrix Display
- Sensor
- Two Motors

Software Design

There will be a counter that constantly runs throughout the program to keep track of the time of the game. Interrupts would be used for the Joystick and IR Sensor to determine if a basket is made or being moved because it constantly needs to check if there is an action. An LED will display three things: The time remaining, score, and high score. Once the 30 seconds start, the basket will start moving in a random direction. We will let the program decide which direction it moves every 5 seconds after the 30 second window. The speed will be set at "fast" which is 10 in Binary. Interrupts would have to take place to trigger the movement of the basket at a specific time.

Goals
1. Set up an LED Display which can display the start message, high score, timer, and current score.
2. Set up the infrared sensor which can detect whether the basket has been made and update the score as a result.
3. Be able to control the motors which will allow for the basketball hoop to move forward, backward, left, and right.

Group Responsibilities

Naimul
- Configure the center button on the joystick which will start the game.
- Configure the 8x32 LED Matrix which will display high score, time remaining, and current score.
- Configure the sensor to ensure the score is accumulated properly when the user makes a basket.
- Create the environment in which the game will be run such as the arena and the basketball hoop.

Rishit:
- Design the Arcade Basketball Game by setting up how many points each basket is worth, the length of the game, and how the backboard moves after a certain period of time. Add interrupts to the system and control the movement of the basket.
- Ensure all the motors and sensors are attached to the proper places which will allow the game to function.
- Control the LED output of the game and figure out how to display the high score, time remaining, and current time.
- Create the environment in which the game will be run such as the arena and the basketball hoop.

Website Link:
- https://sites.google.com/view/ece-153b-basketball-project/