

EE/CS 120B Custom Project - Classic Pong

Description:

Create the classic pong game using the LED matrix. The classic LED pong game, if you haven't played, consists of a paddle on either side of the screen. A ball will bounce between the paddles, and when it strikes a paddle it will bounce back towards the other paddle. Depending on how it strikes the paddle it will bounce in a different manner. If the paddle misses the ball, then the other player scores a point.

Required Components:

LED matrix, Shift Registers, Buttons or Keypad

Basic requirements:

The classic pong game will be displayed on the LED matrix using shift registers to control it. You will need a simple single player version of the game. The other player will be controlled by a fairly basic AI. The AI will use a random number to determine at each movement whether it follows the ball or not. You will need to tweak the AI so that you are able to beat it sometimes. You may also create different "difficulty" levels if you wish. The ball physics will be fairly simple. If the ball hits the center of the paddle it will bounce off the paddle continuing along the same X direction it was traveling in. If the ball hits the corner, then it will head in the opposite X direction. You will also need a soft reset that will take you back to the intro when pressed.

Advancement 1:

Create a more complicated set of ball physics. This includes having the ball speed up when it hits the corner of the paddle, as well as slowing down slightly when it hits the center. You will also want the "spin" of the ball to change if the user moves the paddle when it strikes the ball. This will affect how sharply the ball turns, and can also affect speed.

Advancement 2:

Create a second player for the game. You will be able to play against each other and the winner is the one that wins the best 3 or 5 matches. There is a score keeper on the LEDs to allow either single or multi-player to be selected, and to track the score during game play. Winner LED will blink for a while once winner is decided.

Advancement 3:

There are specials that will affect either the ball, or the players, that make the game more interesting.