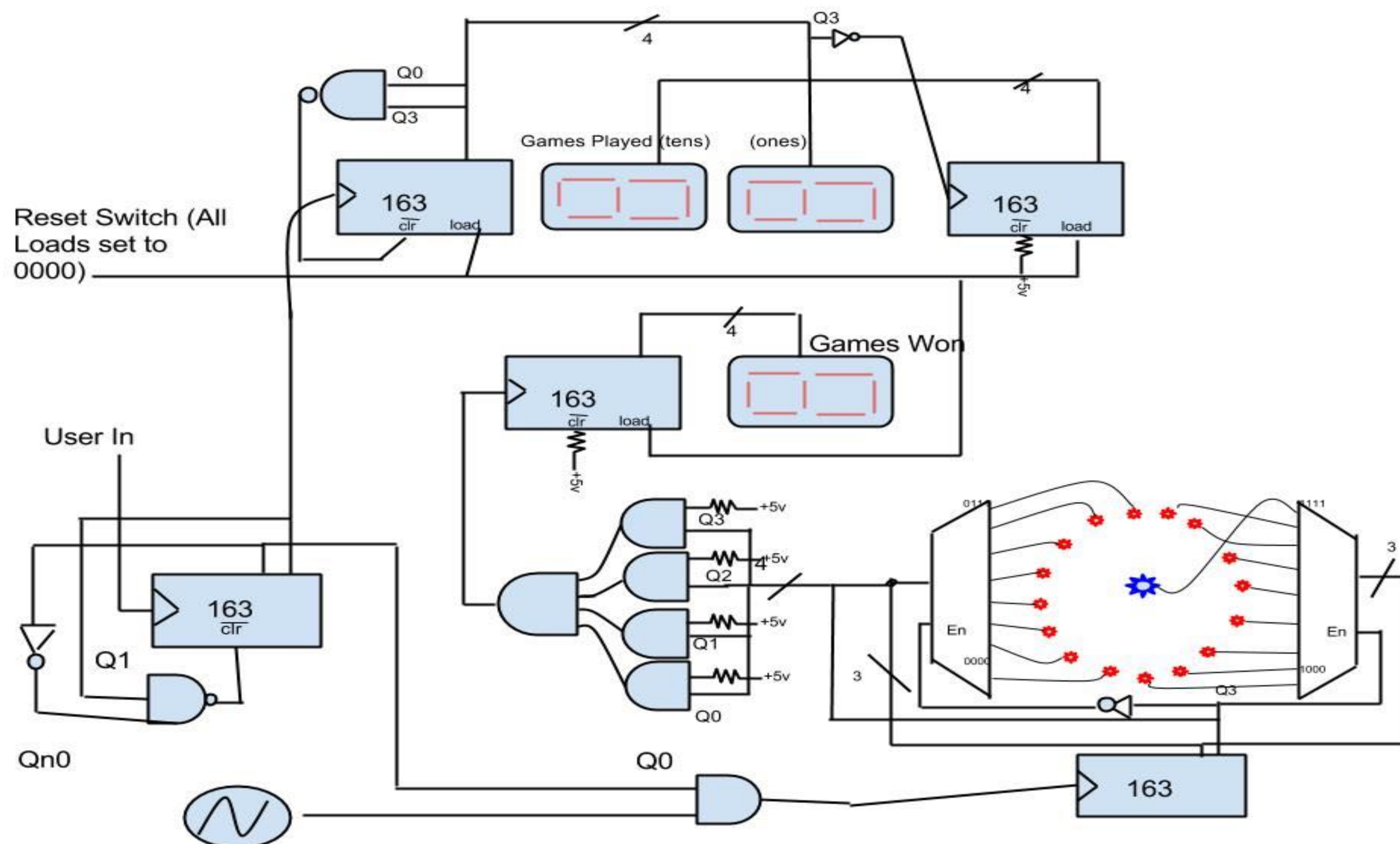


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## How to Play

This circuit is an implementation of a classic arcade game. The game is played by 'chasing' a light around a circle and is won by stopping the light when it reaches the center. The player operates the game with a single button which controls the stop, start, and reset functions of the circuit. The circuit also keeps track of the amount of times the player won the game and how many times the game has been played.



## How it Works

## Input Counter

## LED Array

## Scoreboard

The whole circuit is controlled by an 'input' counter which is clocked by the player pushing the input button. Essentially, the input counter is the brain of the circuit, connecting all the other parts. This counter loops through the values 00, 01, and 10. When 00 is selected nothing is active, 01 activates the LED array meaning the game is currently under way, and 10 clocks the scoreboard meaning the game has finished.

The second main element is the LED array. When activated, a clock connected to a demultiplexer cycles through 0000 to 1111. Each output of the demultiplexer is connected to an individual LED so that the light cycles around the array. The address lines of the clock are also connected to two AND gates, which go positive when the light is in the center (the 1111 position). This AND logic is then connected to another AND gate which goes positive when the user has 'ended' the game by switching to the reset phase.

The last part of my circuit is the scoreboard, which is implemented by three counters. Simply, the 'games won' display increases when the AND logic goes positive which is when the player wins the game. The 'games played' display is incremented when the input counter is in the 'reset phase,' or after the game has been played.

## Results

This circuit works exactly as planned. One thing I eventually added a reset latch, which I implemented by hardwiring all the counter loads to 0000 and running the loads to a logic switch. Another step in the circuit would be to add another ring of LEDs where the light loops the opposite way.

