Tic-Tac-Toe

By: Sean Kirschke, Andrew Galczyk, Douglas Loper, Daniel Strunk

About the Game

- Tic-Tac-Toe is a two player where players take turns placing an X or an O into one of nine squares which are arranged in a 3x3 pattern. When a player gets three in a row, they win the game. If all squares are filled with no lines of three, it is a draw.

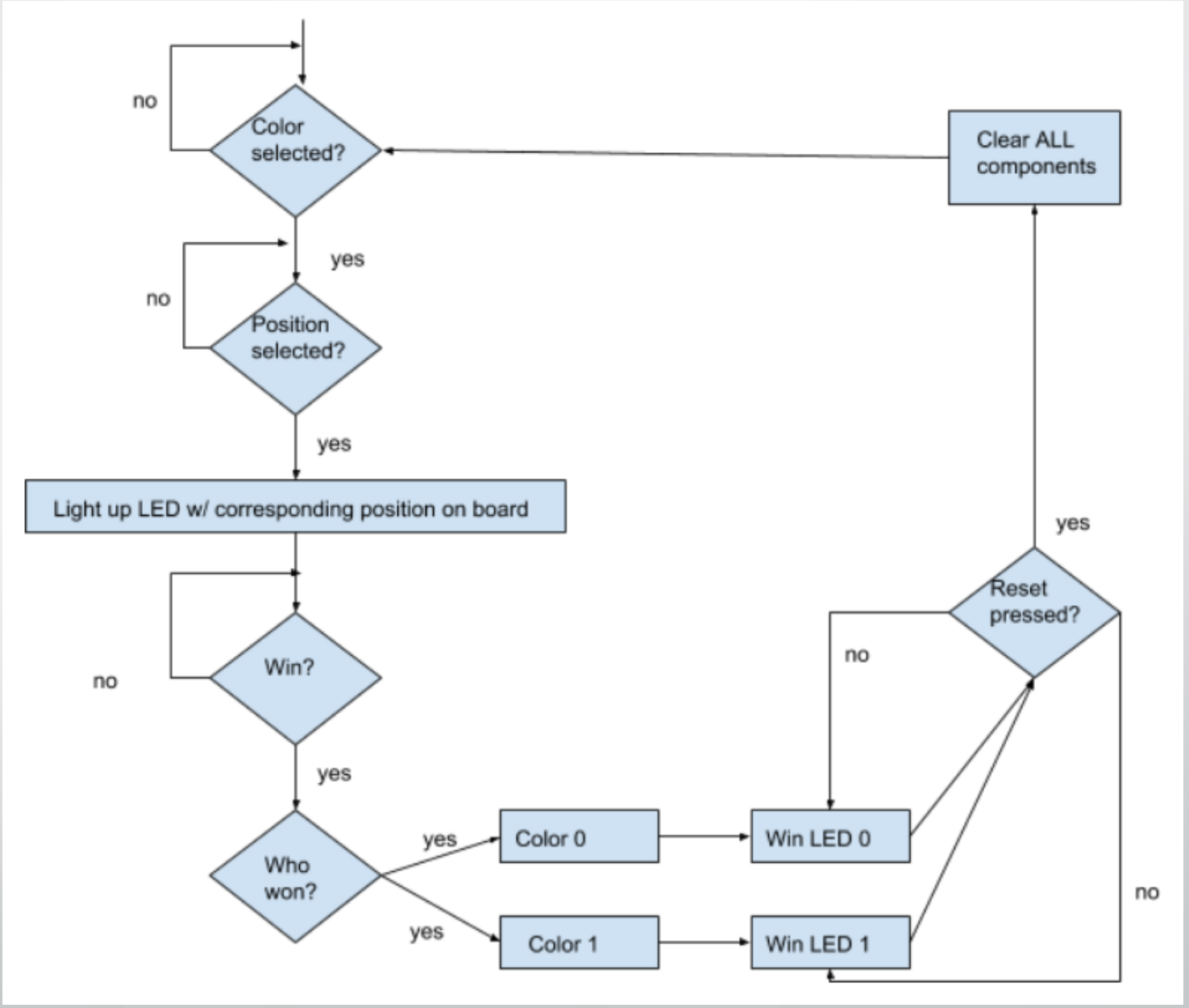
About the Board

- In our iteration of the game there are two LEDs per square representing each player rather than the traditional X or O
- When a winning pattern is played, the board will illuminate an LED signifying who won
- The players move is determined by switches using binary as placement
- A button is pressed to submit the players move
- A switch will be toggled at the end of each turn to change player
- The reset button is pressed to start again

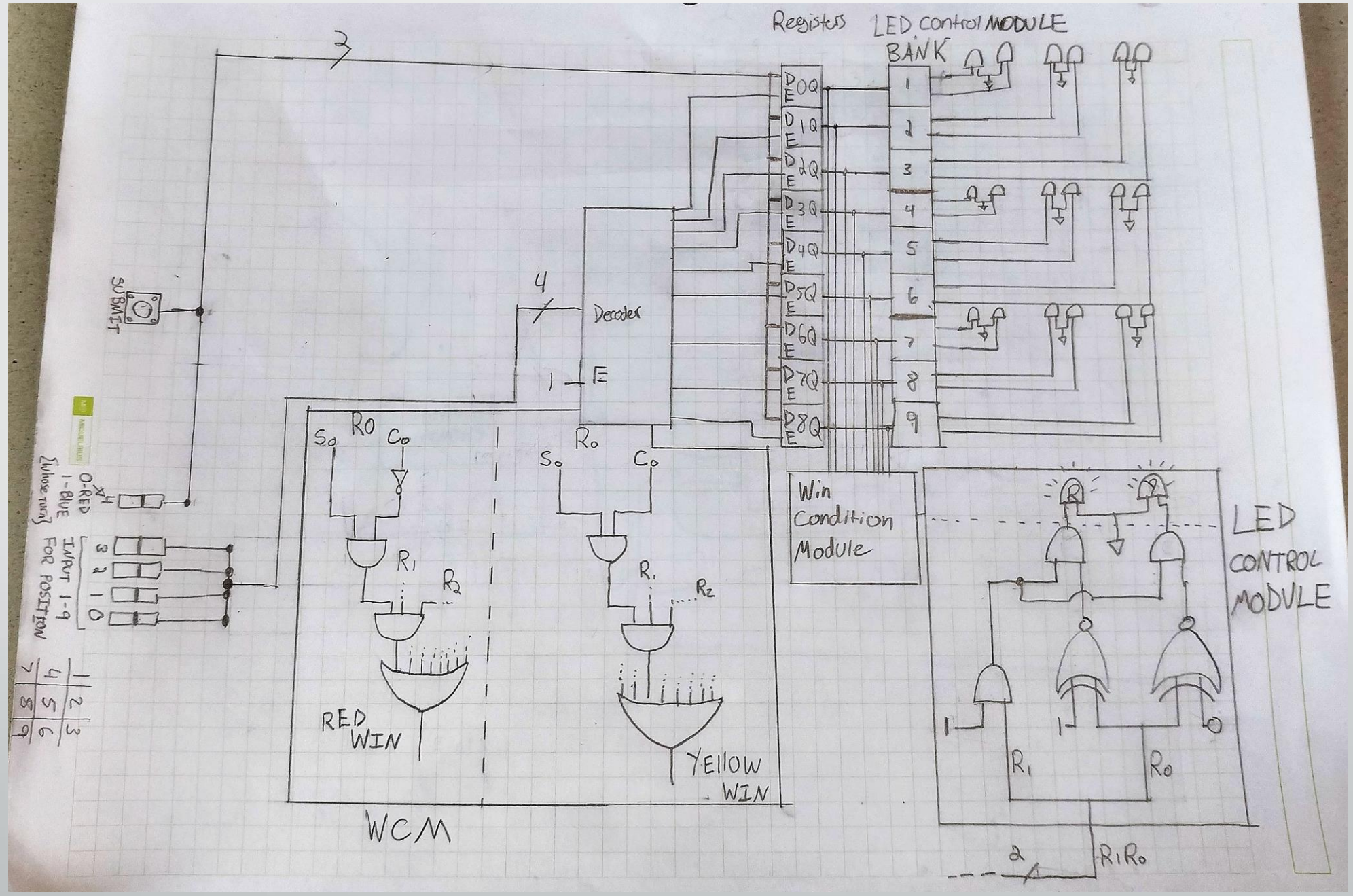
Components

- The following components were simulated using VHDL code
- 9 Registers
- Decoder
- Various logic gates for LED Control Module
- Various logic gates for Win Condition Module

Logic Flow Chart



Design


Registers
LED control MODULE
BANK
Decoder
SUBMIT
Win Condition Module
LED CONTROL MODULE
WCM
RED WIN
YELLOW WIN
INPUT 1-9 FOR POSITION
0-RED
1-BLUE

Instructions