

# Logic Master

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# Mastermind

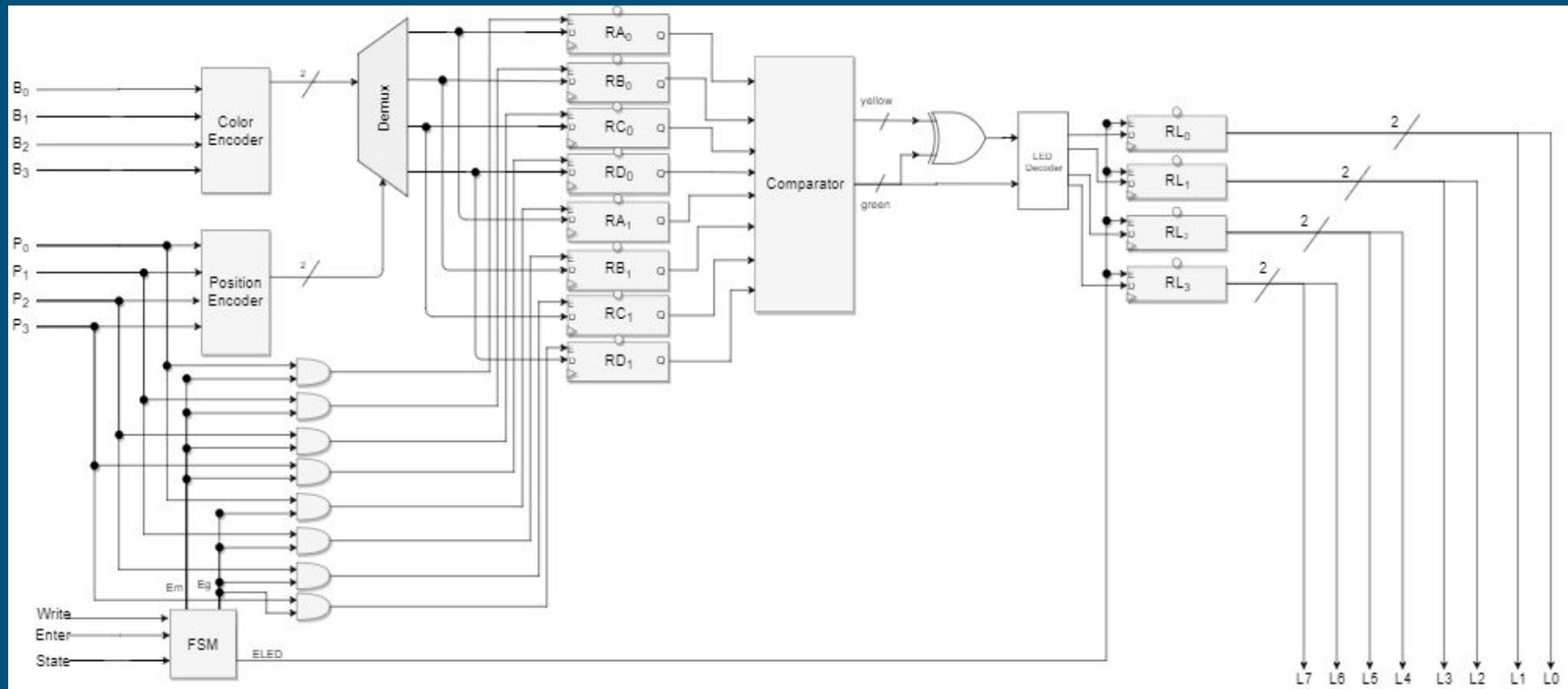
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## General Game Mechanics:

- 2 player
- Mastermind chooses a sequence of 4 colors.
- Guesser attempts to guess the color sequence.
- Guesser receives a combination of red and white pins to signify a correct color *and place* (red) and a correct color *out of place* (white).
- The Guesser then uses this information to make a new informed guess.

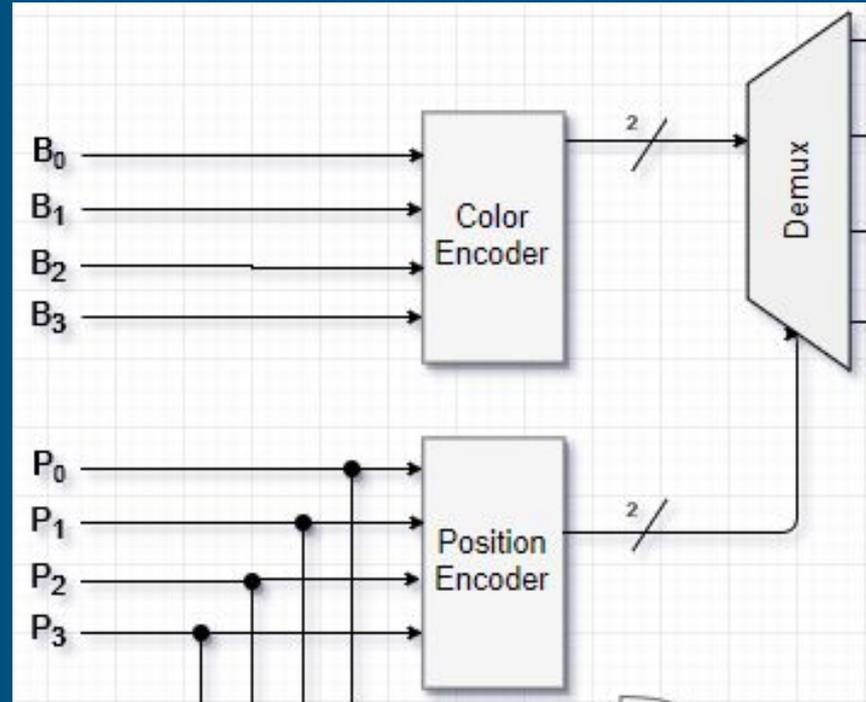


# Overview



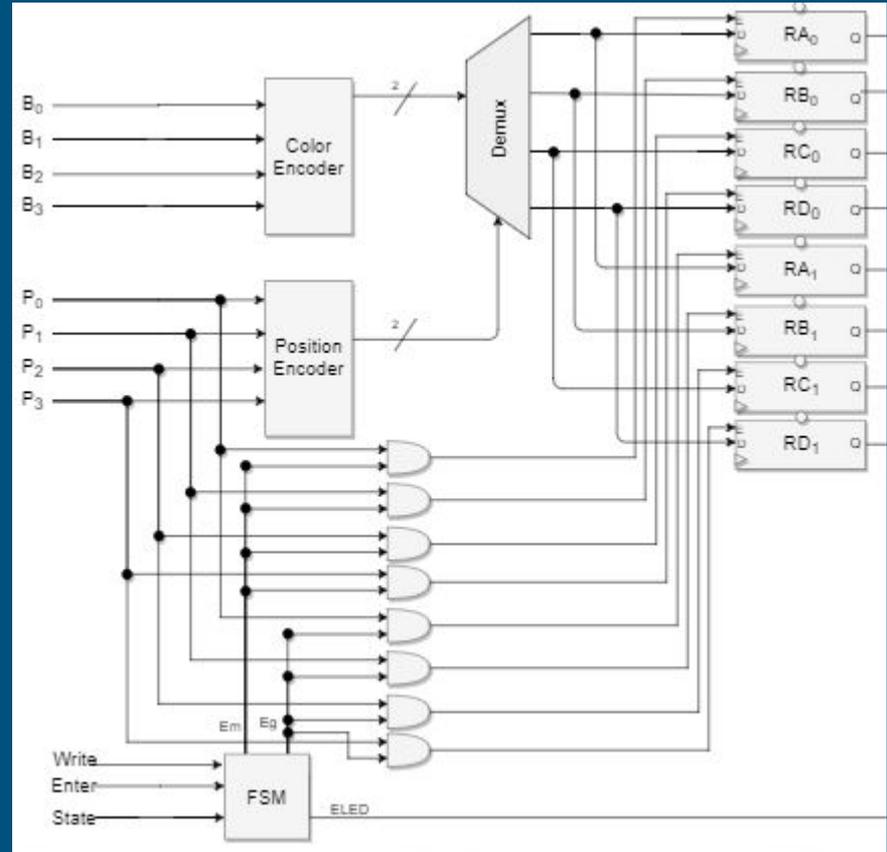
# Inputs and Demux

- 2 4-to-2 bit encoders.
- One codes color choice.
- Other codes switch position.



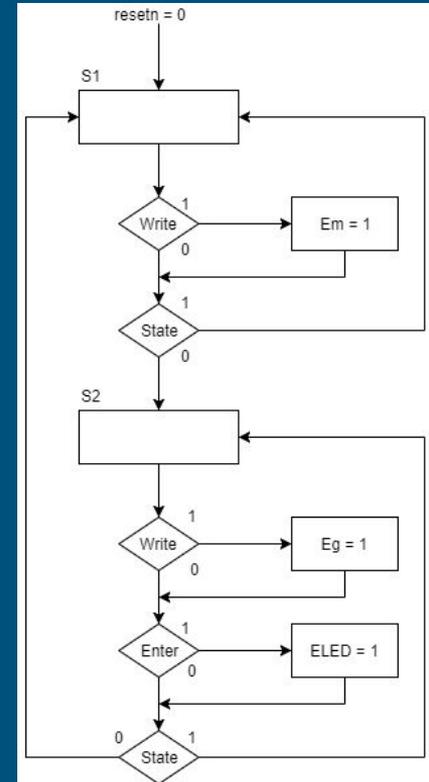
# Registers

- Demux sends signals to registers.
- First 4 registers store desired sequence.
- Next 4 registers store the guesses.



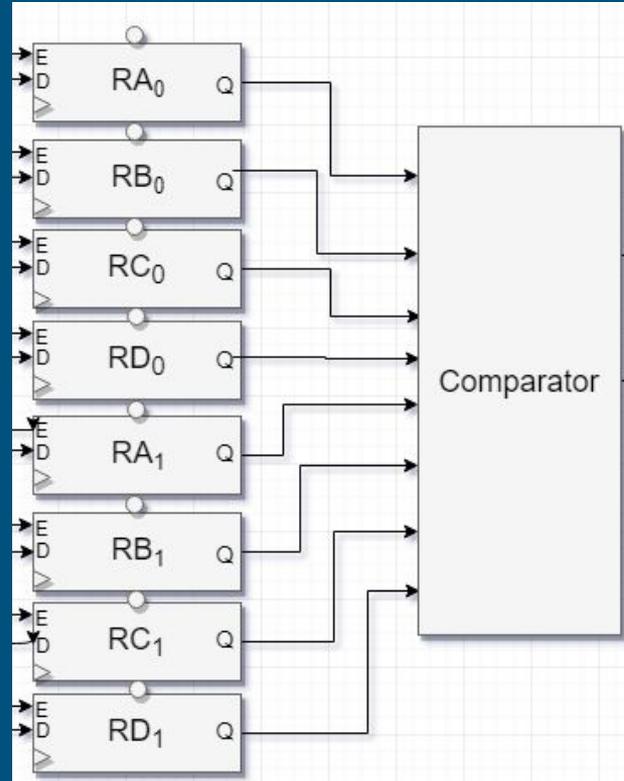
# FSM

- FSM monitors the status of the game mode.
- The state of the FSM is either in the set sequence or guess. sequence mode, controlled by a switch that determines the state variable.
- Based on the pressing of the enter key a guess is recorded
- Once the guess is recorded the LEDs are enabled.
- If the state variable is set back to 0, or set sequence mode, the state goes to state 1.



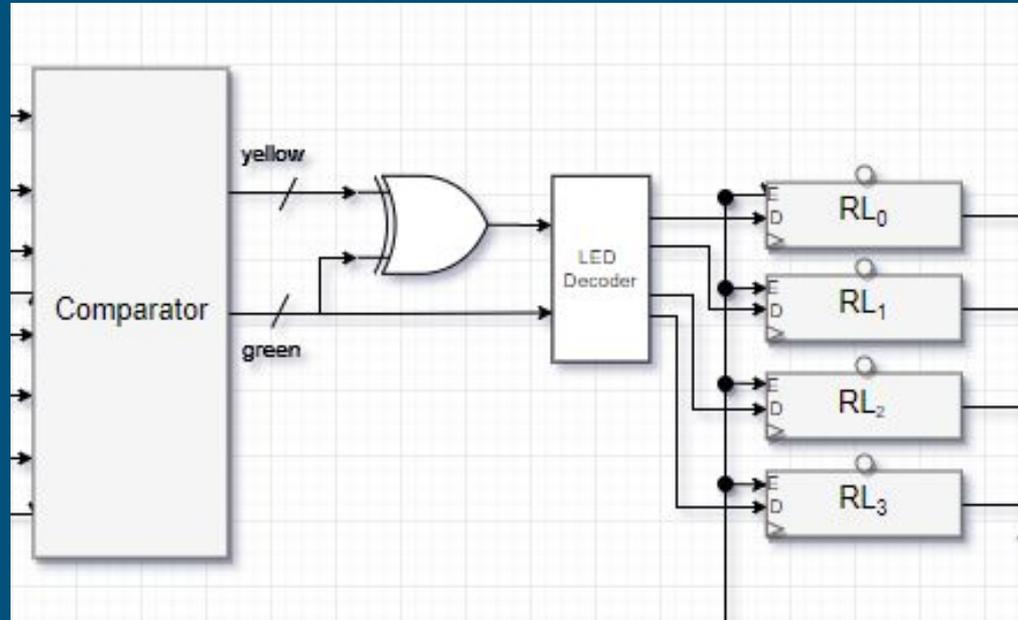
# Comparator

- Registers flow into a comparator, which is constructed of 16 equality detectors.
- Those detectors flow into a logic sequence that compares the 2 sequences.



# Outputs

- Signals file into a 2-to-4 decoder
- The registers after the decoder hold the values set by the comparator until the “Enter” button is pressed.
- The LEDs display the accuracy of the guess.



# Improvements

- RGB LEDs
- Improved packaging
- Guess register

