AI1110: Probability and Random Variables Hardware Project

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abstract: In this project, we made a random number generator using shift registers.

Components used:

1) Breadboard
2) Seven segment display
3) Decoder
4) 2 Flip Flop IC's
5) X-OR GATE
6) 555 IC
7) Resistors(1K, 1M)
8) Capacitors(100nF, 10nF)
9) jumper wires

Procedure:

- We generate the clock signal for the flip flops by using the 555 timer IC and making the respective connections.
- Next, we used the flip flops to make a shift register with 4 bits, Q_0, Q_1, Q_2, Q_3, and the inputs being D_0, D_1, D_2, D_3.
- Then the XOR gate is connected such that $D_0 = Q_0 \oplus Q_3$.
- Then, the four bits are connected to the decoder IC, which is connected to the 7-segment display.
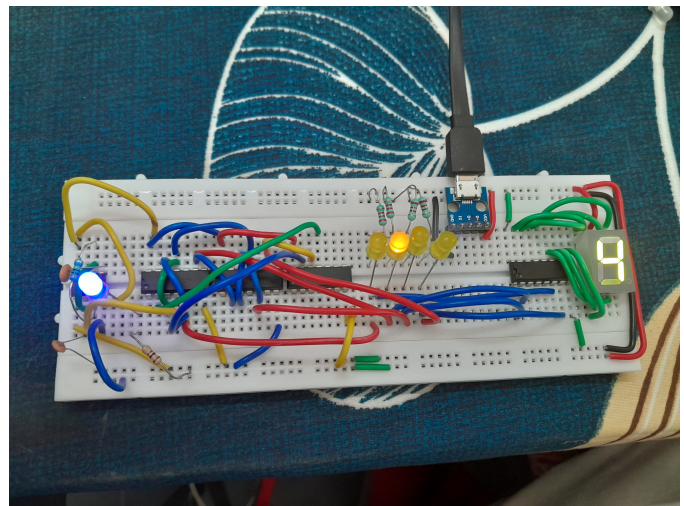

Fig. 1. circuit working