Hardware Report

AI1110: Probability and Random Variables

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(a) Description: This project aims to implement a random number generator using an IC555 timer circuit with an XOR gate. The circuit consists of five chips, including an XOR gate, one resistor, and two capacitors. The project utilizes these components to display random numbers on a displayer connected to the circuit. This report documents the design, implementation, observations, and conclusions of the random number generator project.

(b) Components:

Component	value	Quantity
Breadboard		1
Seven Segment Display	Common Anode	1
Decoder	7447	1
Flip Flop	7474	2
X-OR GATE	7486	1
555 IC		1
Resistor	1K ohms	1
Resistor	1M ohms	1
Capacitor	100 nF	1
Capacitor	10 nF	1
Jumper Wires		20

(c) Observation: The XOR gate introduces randomness by XORing the signals from the IC555 timer circuit. The resistor and capacitors influence the timing and stability of the circuit, affecting the randomness of the generated numbers. The displayer effectively presents the random numbers produced by the circuit.

(d) Images:

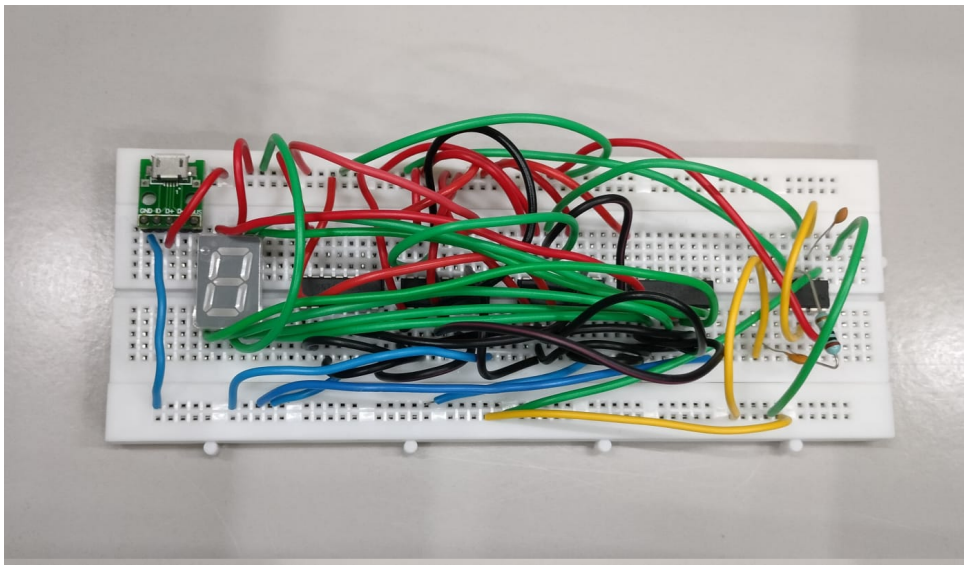

Fig. (d). Image of circuit

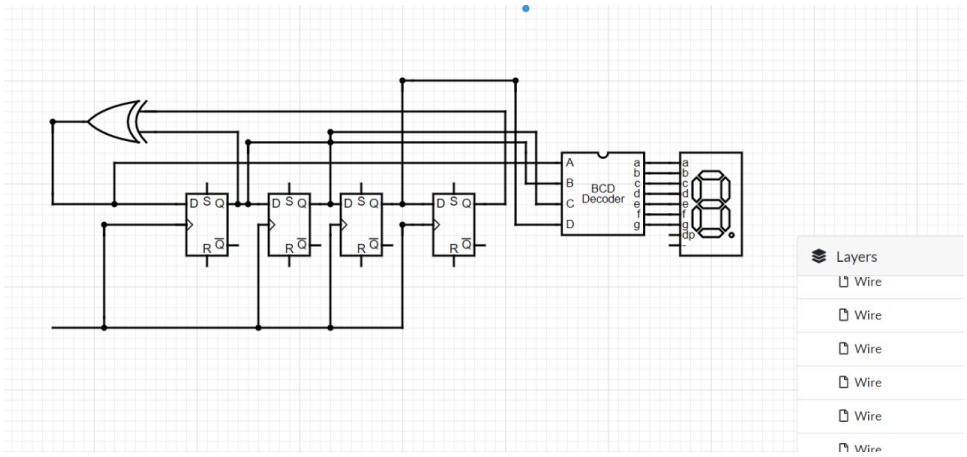

Fig. (d). Image of Block Diagram