REPORT ON HARDWARE ASSIGNMENT

AI1110: Probability and Random Variables
Indian Institute of Techonology Hyderabad

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CS22BTECH11057

***Abstract*—In this assignment we have made a Random number generator using shift registers**

1 Components used

Component	Value	Quantity
Breadboard		1
Seven Segment Diplay	Common Anode	1
Decoder	7447	1
Flip Flop	7474	2
X-OR Gate	7486	1
555 IC		1
Resistor	1 KΩ	1
Capacitor	100 nF	1
Capacitor	10 nF	1
Jumper Wires		

TABLE 0: Components used

2 Description

(i) First, a micro USB is used to generate a VCC and GNG bus.

(ii) A square wave signal is generated by forming a circuit using a 555 timer IC, a 10 KΩ Resistor, 100 nF Capacitor, and 10 nF Capacitor to introduce a time delay for the random numbers to be generated.

(iii) The clock output of the 555 timer circuit is connected to a clock signal of D flip-flops.

(iv) A circuit for shift registers is created using 4 D flip-flops (two 7474 ICs) and an XOR gate (7486 IC). Each output of the D flip-flop is connected to a decoder IC (7447 IC).

(v) The connections are made for the seven-segment display to display the random numbers.

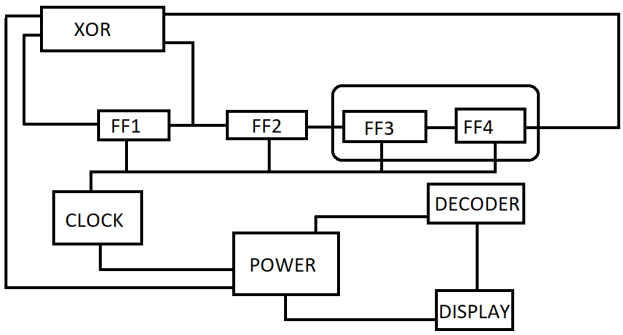

Fig. (v): Block diagram

We obtained different digits which was continuously flickering on the seven segment display the output is shown in figure

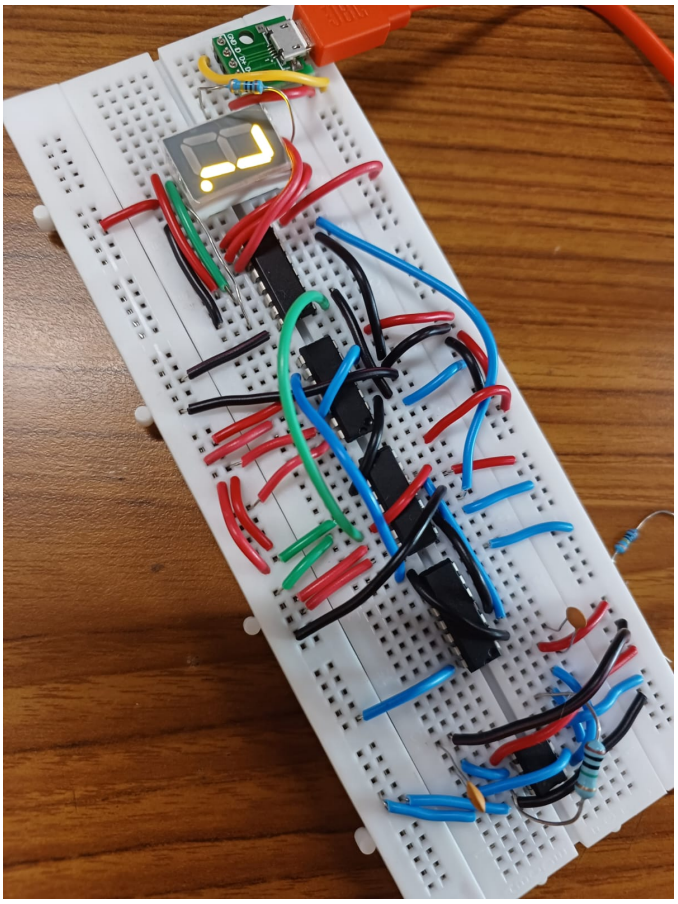

Fig. (v): CURCUIT