Hardware Assignment

AI1110:Probability and Random Variables
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***Abstract*—In this assignment we have made a Random number generator using shift registers**

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

Procedure

1) We connected the 555 timer circuit according to the figure 1

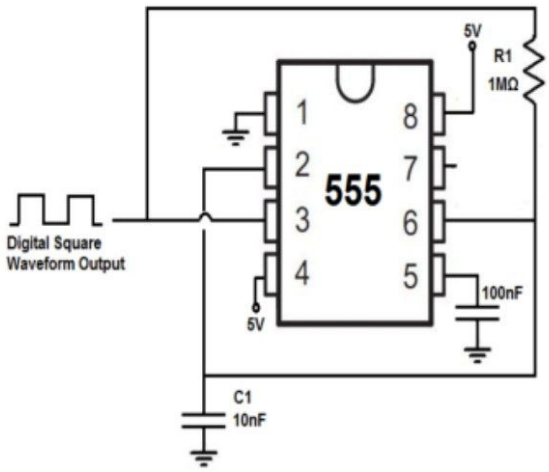

Fig. 1. Connection in 555 timer circuit

2) Then we connected Clock output of 555 timer circuit to the clock signal of D-Flip flops.
3) Now we make the circuit for shift register using D-Flip flops with 4 bits Q_0,Q_1,Q_2,Q_3 and D_0,D_1,D_2,D_3 being their inputs.
4) Then we connected XOR gate according to the figure 4

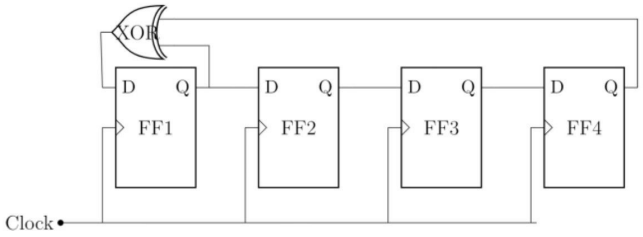

Fig. 4. Connection in XOR gate

5) Then we connected the A,B,C,D of the decoder (7447 IC) with Q_0,Q_1,Q_2,Q_3 respectively as per the figure 5

Fig. 5. Connection in Decoder gate

6) Next, we connect the 7-segment display with the dceoder (7447 IC).

Output

Output was changing digits on the seven segment display the output is shown in figure 6

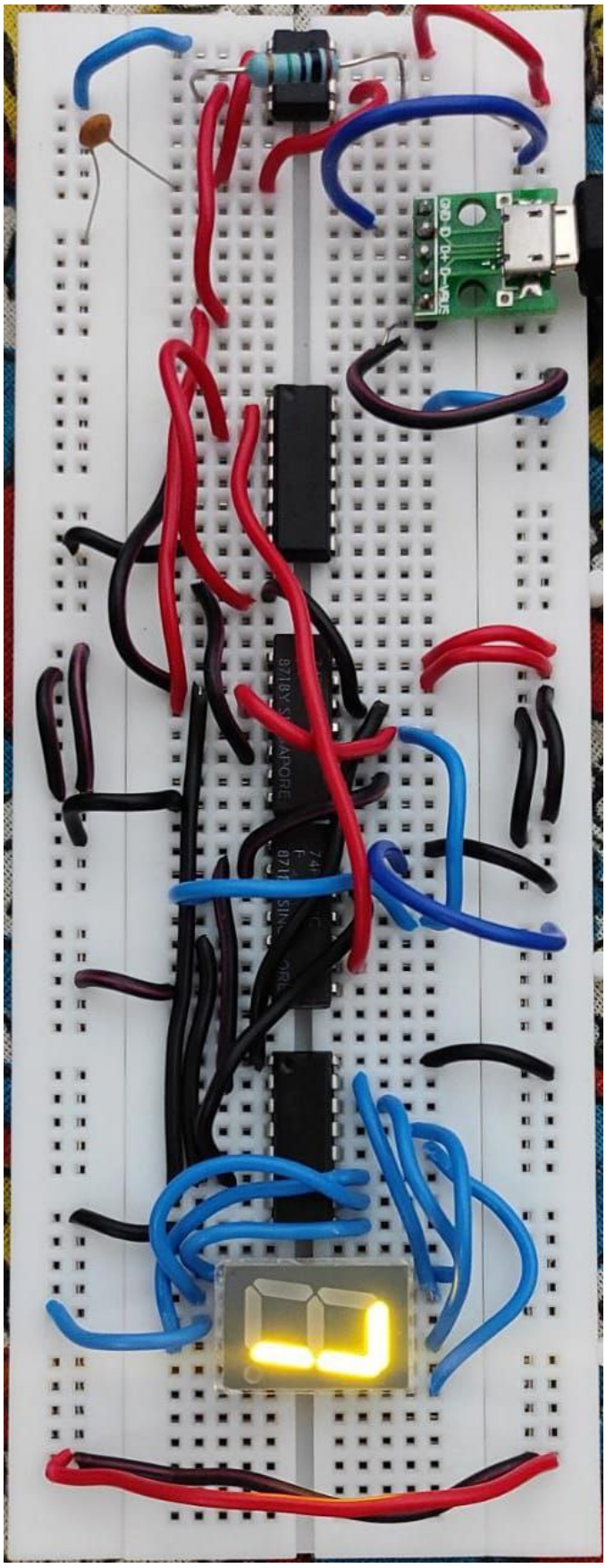

Fig. 6. output