Hardware Project

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***Abstract*—In this Project I make 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 given **??**

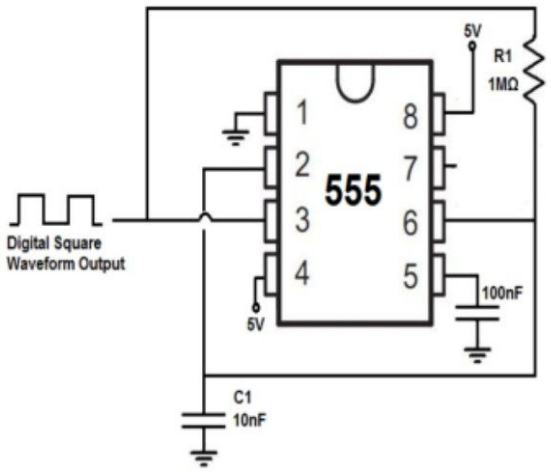

Fig. 1. Connection in 555 timer circuit

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 registers using a 4 D-Flip flops (using two 7474 IC's)

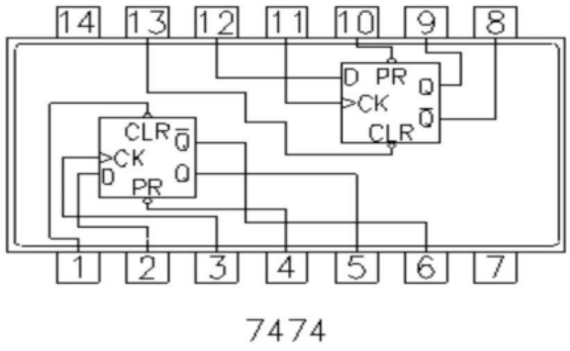

Fig. 3. Connection in 7474 IC

4) Then we connected XOR gate (7486 IC) according to the figure **??**

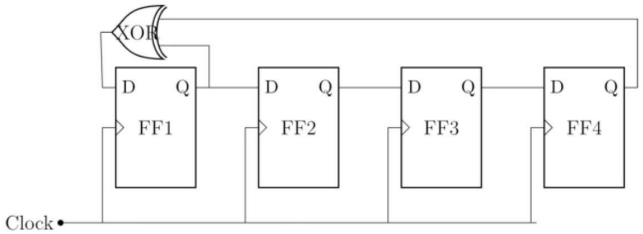

Fig. 4. Connection in XOR gate

5) then we connected the decoder (7447 IC) and connected its A,B,C,D with Q_0,Q_1,Q_2,Q_3 respectively as per the figure **??**

Fig. 5. Connection in Decoder gate

6) Then we connected The seven segmented display and then connected it with the dceoder (7447 IC) according to the table **??** and the figure **??**

7447	$\bar{a}$	$\bar{b}$	$\bar{c}$	$\bar{d}$	$\bar{e}$	$\bar{f}$	$\bar{g}$
Display	a	b	c	d	e	f	g

Fig. 6. Connection of seven segmented display with decoder

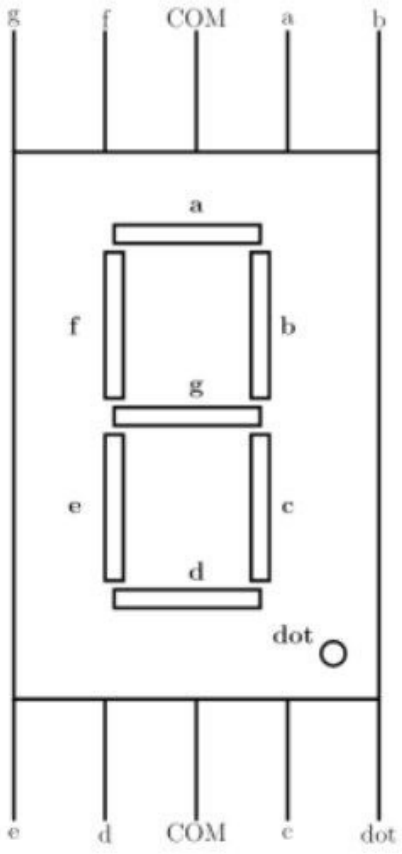

Fig. 6. Seven segmented display

7) We connected all the independent parts with each other and then connected the power source

Output

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

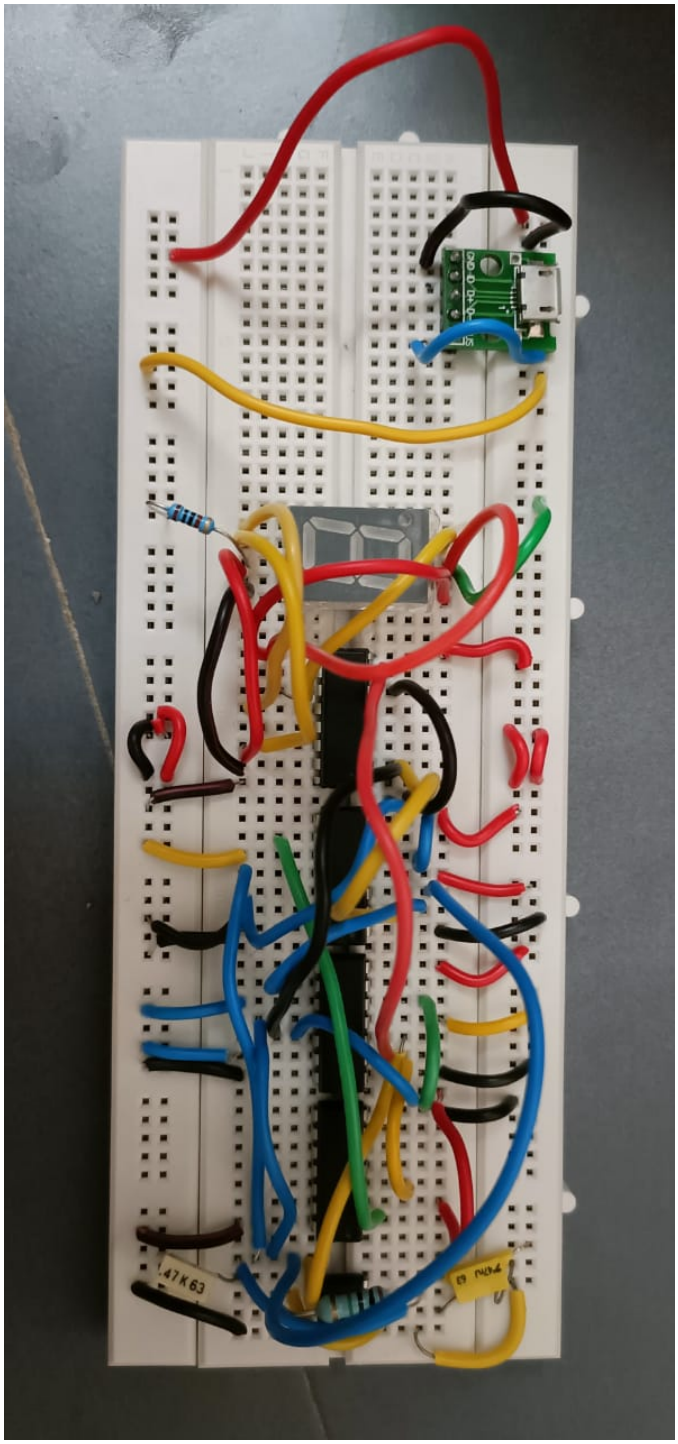

Fig. 7. output