Hardware assignment

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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) Connect 555 timer
2) Connect clock signal of D-Flip flops to the Clock output of 555 timer circuit.
3) The next step in the process would be to make the circuitary in such a way that shift registers for using a 4 D-Flip flops (using two 7474 IC's)
4) The next connection is XOR gate (7486 IC)

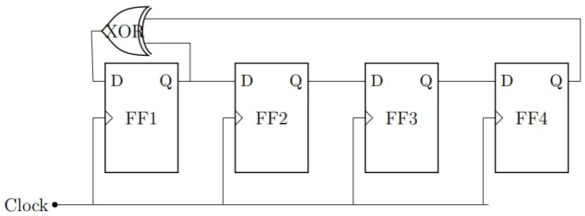

Figure 1.1.3.1: Circuit Connections

Fig. 4. circuit connection

5) A,B,C,D of the decoder (7447 IC) is connected with Q_0,Q_1,Q_2,Q_3 respectively

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

Fig. 5. Connection of seven segmented display with decoder

6) Final step is to connect the seven segmented display and then connected it with the dceoder (7447 IC) according to the table 5 and the figure 5

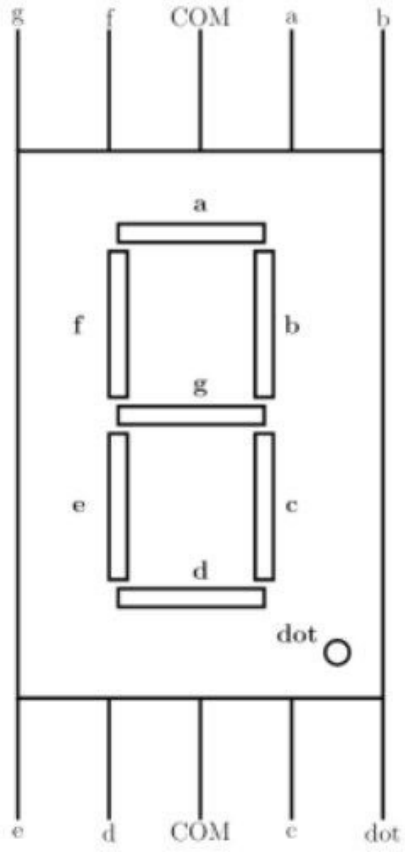

Fig. 5. Seven segmented display

7) All the independent parts should be connected with each other and then connected the power source

Output

Output as expected is randomly changing numbers as per the figure 7

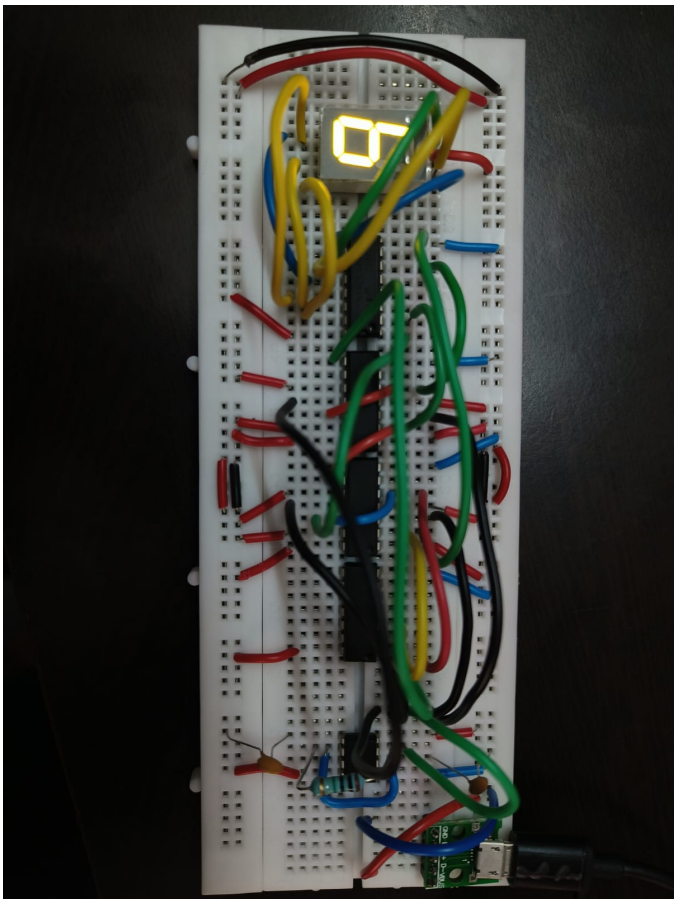

Fig. 7. output1

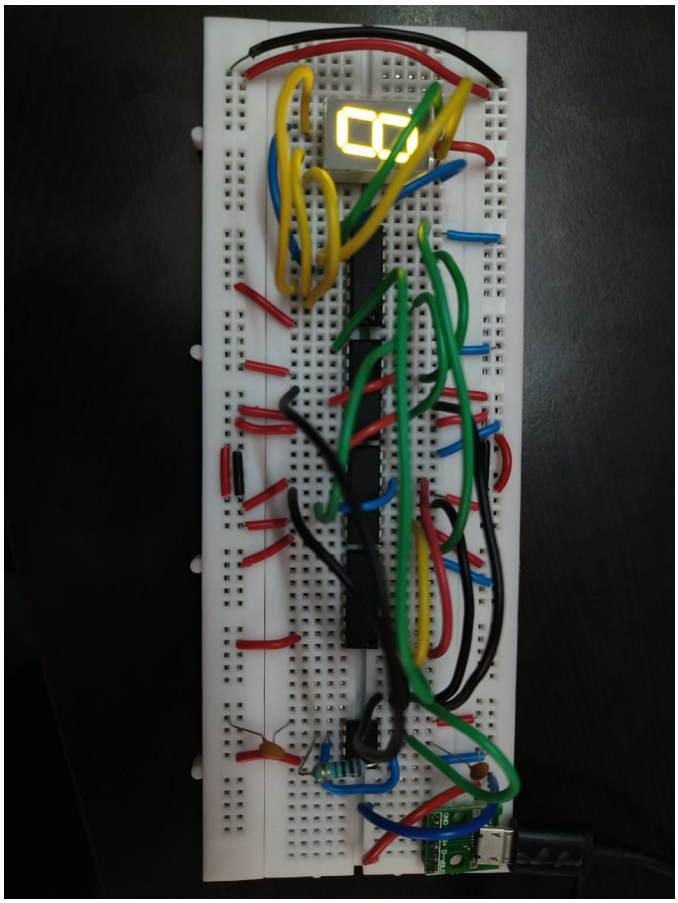

Fig. 7. output2