Probability 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) We connected the 555 timer circuit according to the figure,this is done to produce clock signal 1

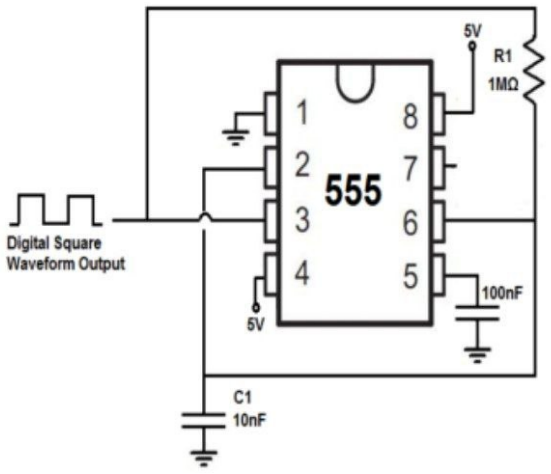

Fig. 1. Connection in 555 timer circuit

2) Then we connected Clock output of 555 timer circuit to the clock signal of D-Flip flops
3) next,we made the circuit for shift registers,for this we used 4 flip flops and one xor gate,following figure shows this process(using two 7474 IC's)

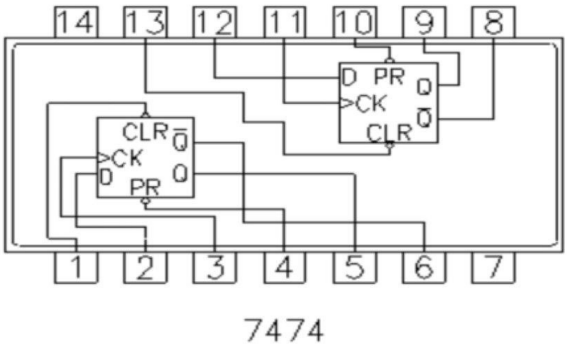

Fig. 3. Connection in 7474 IC

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

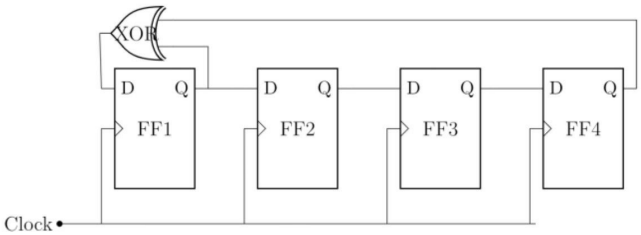

Fig. 4. Connection in XOR gate

5) output of each flip flop was connected to decoder(7447 IC) as per the figure 5
6) Then we connected The seven segmented display and then connected it with the dceoder (7447 IC) according to the table 6 and the figure 6
7) We connected all the independent parts with each other and then connected the power source
8) in this process connections play a very important role,if any connection is misplaced,then we can not guarantee to get the desired result

Fig. 5. Connection in Decoder gate

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

9) apart from misplacing,if any connection is loosely connected,then also we may not get our result
10) additionally,connections like vcc and gng were made to every IC

Output

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

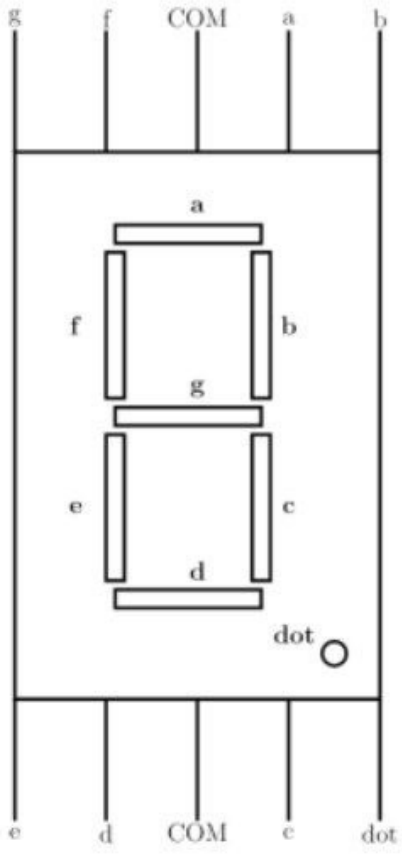

Fig. 6. Seven segmented display

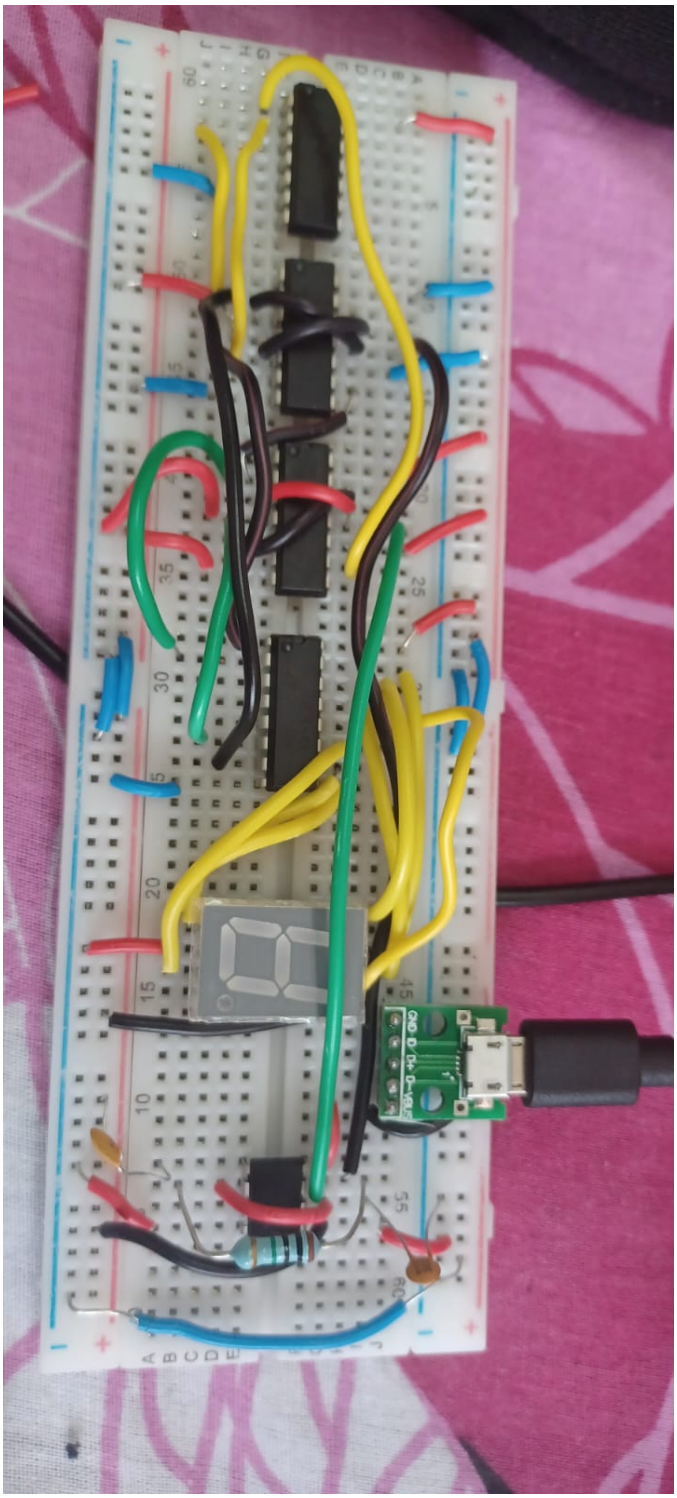

Fig. 10. output