Probability Hardware Report in LaTeX

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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

2 Method

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

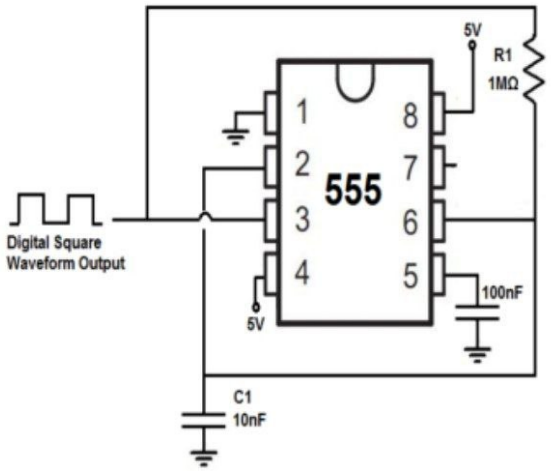

Fig. 1. Connection in 555 timer circuit

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

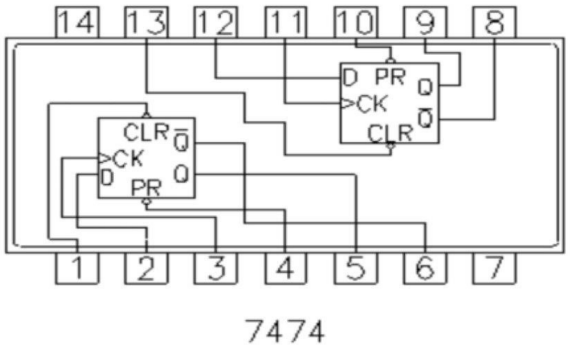

Fig. 3. Connection in 7474 IC

4) The out put of each D Flip Flop acts as the out put for the next Q and eventually the XOR gate will take in D_0 and D_3 as the inputs.
5) Then we connected XOR gate (7486 IC) according to the figure 5
6) 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 6
7) Then we connected The seven segmented display and then connected it with the dceoder (7447 IC) according to the table 7 and the figure 7

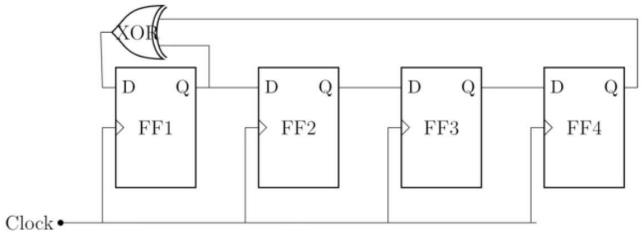

Fig. 5. Connection in XOR gate

Fig. 6. Connection in Decoder gate

8) We now connected the power source to our circuit and we get the numbers.

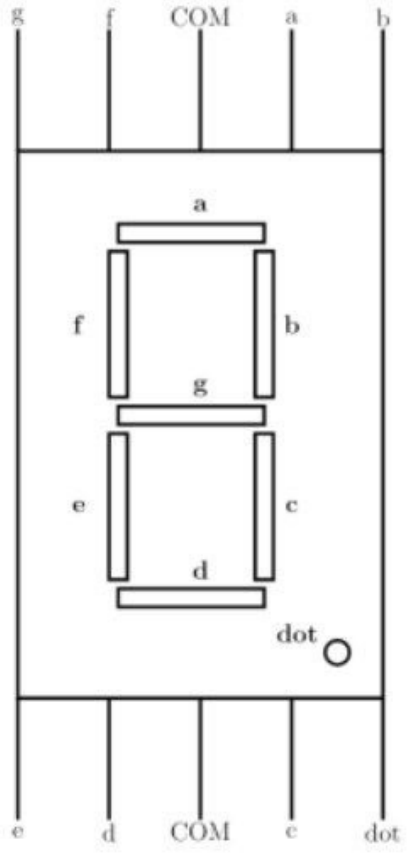

Fig. 7. Seven segmented display

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

Fig. 7. Connection of seven segmented display with decoder

3 Output

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

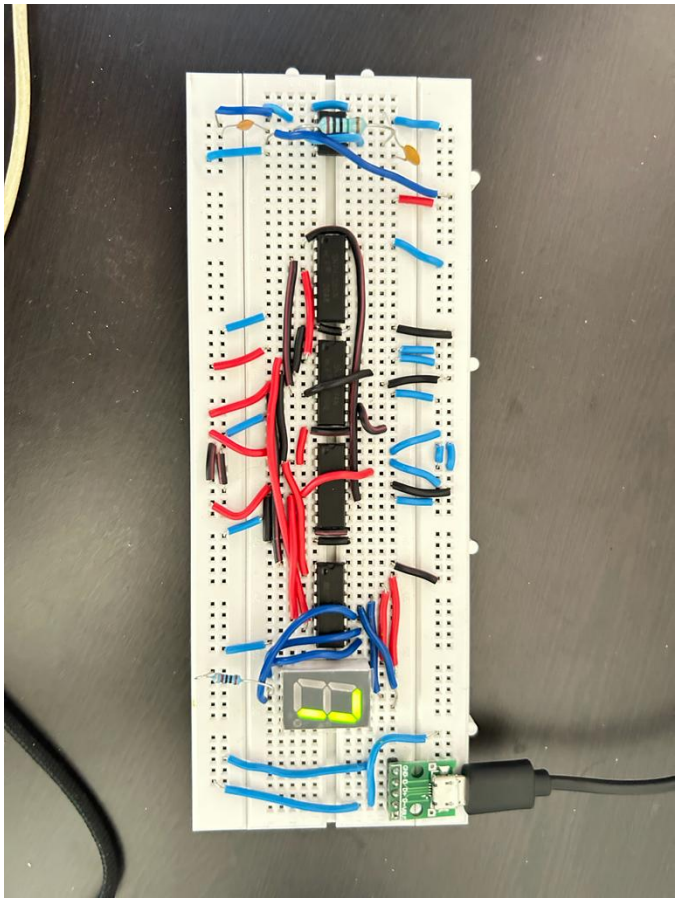

Fig. 8. output

4 Conclusion

a) We basically are shifting outputs of D Flip Flops as the input to the next D Flip Flop which happens 4 times on our case.
b) Finally the XOR gate takes in the value of D_0 and D_3 as the input and gives out the finaly number.
c) The decoder IC 7447 basically decodes the output of the XOR gate and gives the voltage only to those segments that need to be turned on.
d) And finally the seven segement display displays the random(not quite) number.

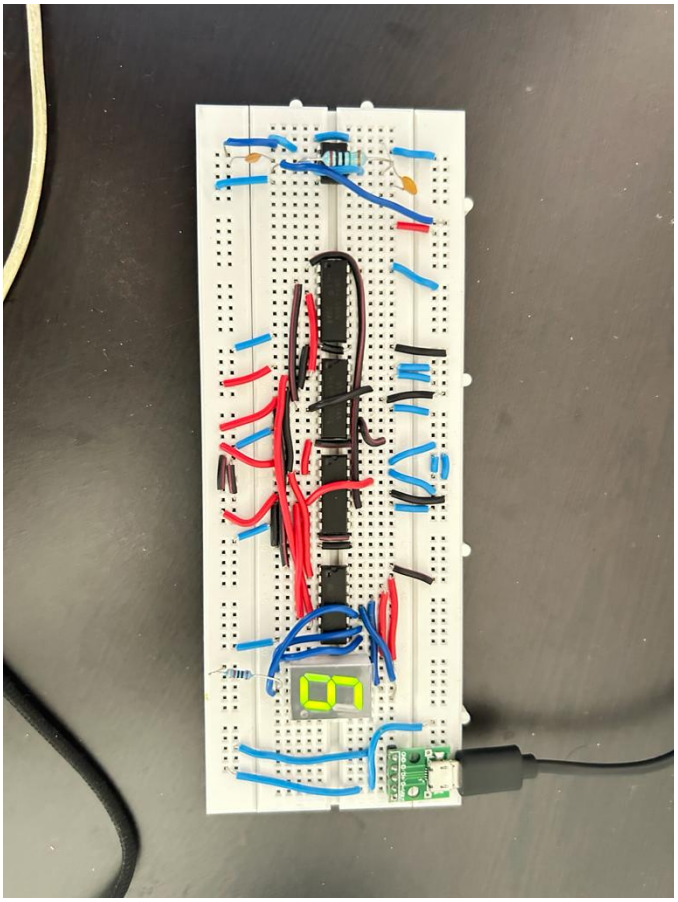

Fig. 8. output

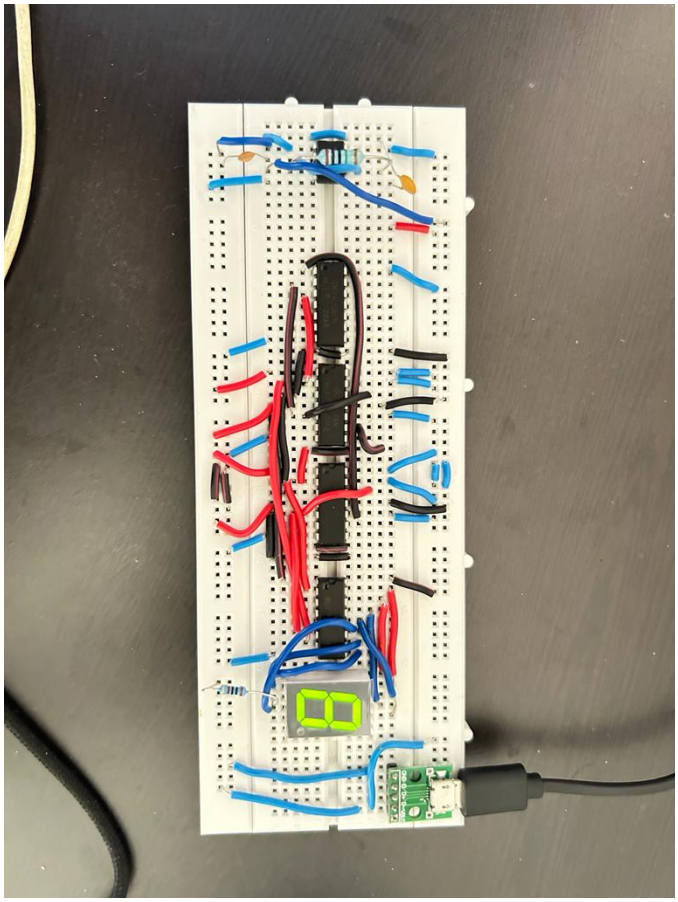

Fig. 8. output3

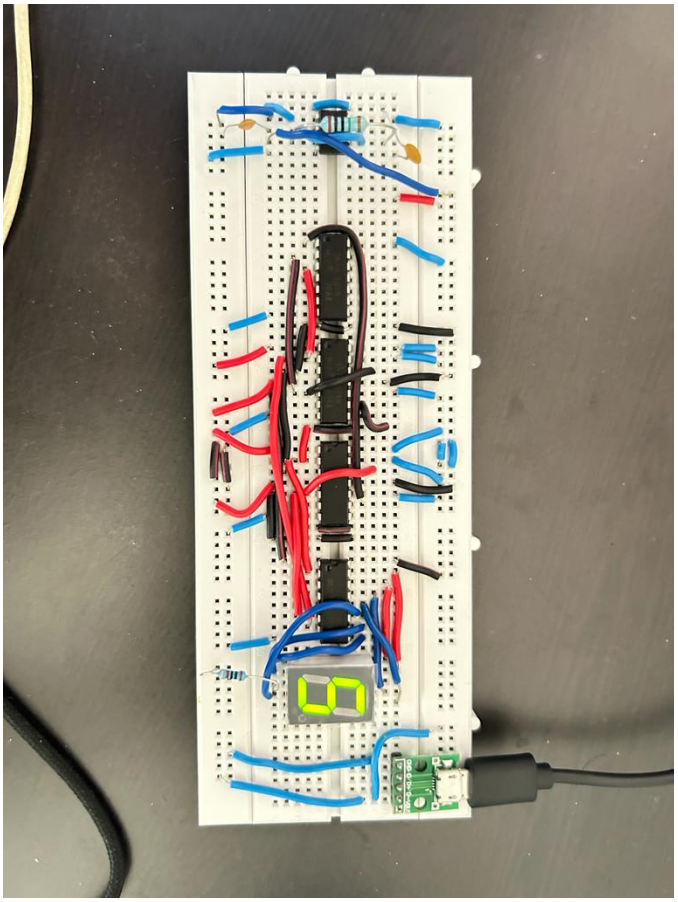

Fig. 8. output4