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 I
COMPONENTS USED

PROCEDURE

1) Connect the 555 timer circuit as shown in Figure 1.

Fig. 2. Connection in 7474 IC

Fig. 3. Connection in XOR gate

4) Use XOR gate to obtain the result.
5) Connect the decoder (7447 IC) and link its inputs A, B, C, and D to Q_0, Q_1, Q_2, and Q_3 outputs, respectively, as shown in Figure 4.
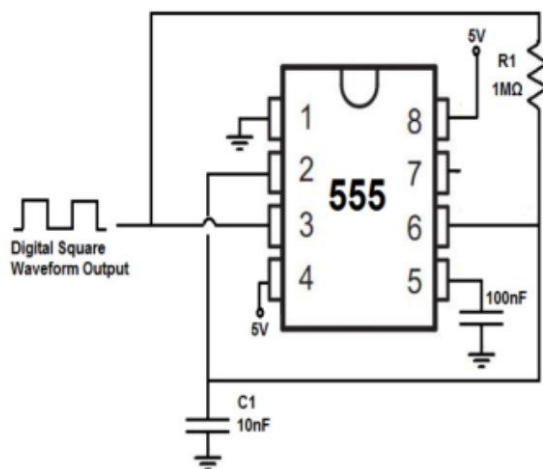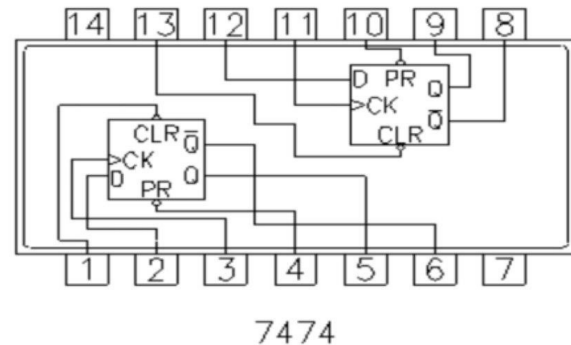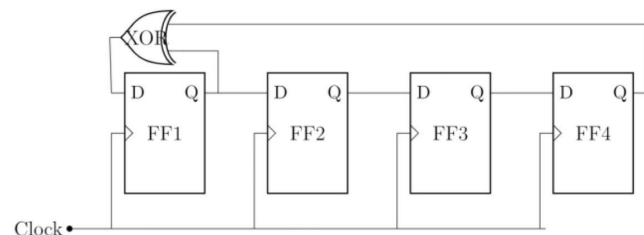

Fig. 1. Connection in 555 timer circuit

2) Connect the output of D flip-flops.
3) Perform the shifting of resistors using 4 D flip-flops (using two 7474 ICs).

Fig. 4. Connection in Decoder gate

6) Connect the seven-segment display and connect it to the decoder (7447 IC) based on the connections specified in Table 5 and the figure in Figure 6.

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

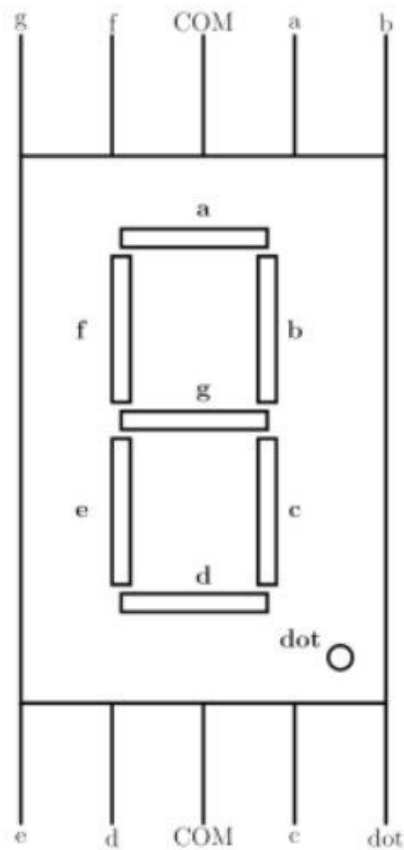Fig. 5. Connection of seven-segment display with decoder

Fig. 6. Seven-segment display

7) Connect all the independent parts together and then connect the power source.

OUTPUT

Output was changing digits on the seven segment display the output is shown in figure 7 , 8 and 9
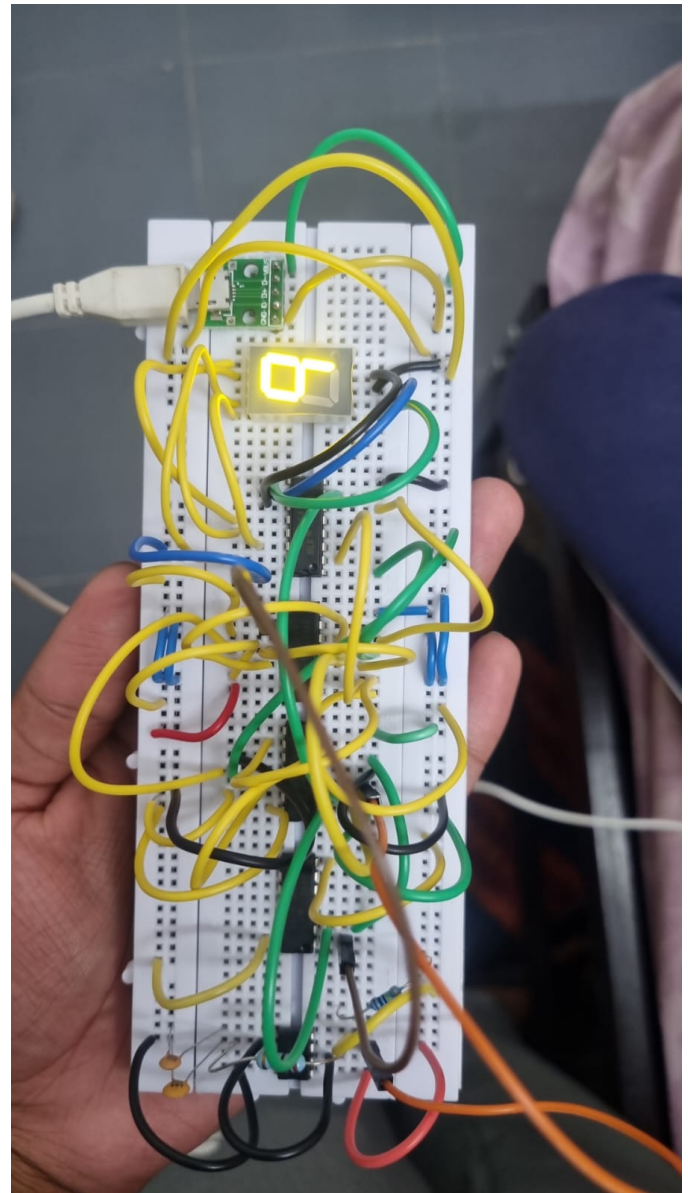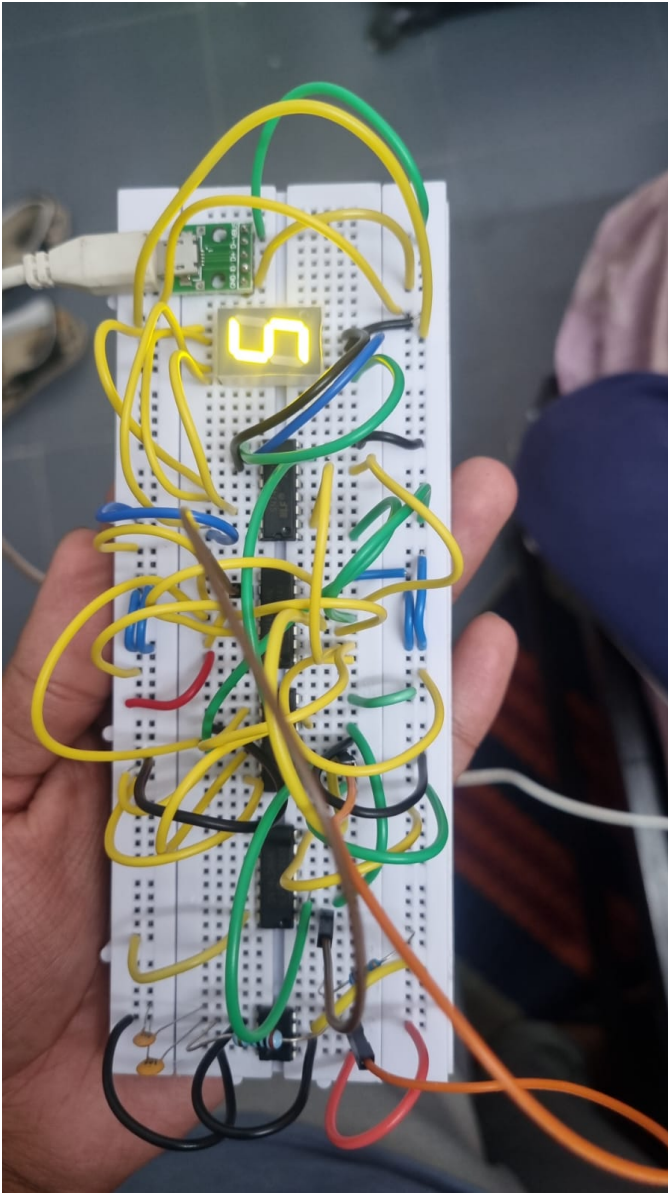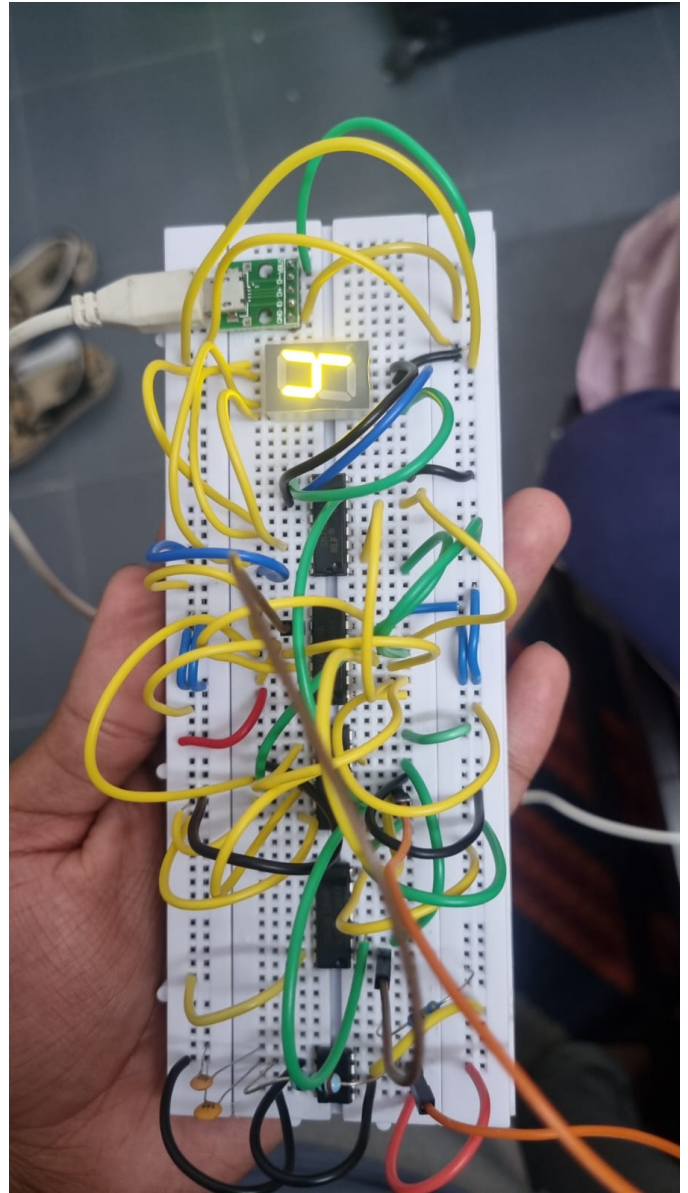

Fig. 7. Final board 1

Fig. 8. Final board 2

Fig. 9. Final board 3