

Hardware assignment

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Abstract—In this assignment we have made a Random number generator using shift registers

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

COMPONENTS USED

Component	Value	Quantity
Breadboard		1
Seven Segment Display	Common Anode	1
Decoder	7447	1
Flip Flop	7474	2
X-OR Gate	7486	1
555 IC		1
Resistor	1 K Ω	1
Capacitor	100 nF	1
Capacitor	10 nF	1
Jumper Wires		

TABLE 0
COMPONENTS USED

PROCEDURE

- 1) Connect 555 timer according to the figure 1

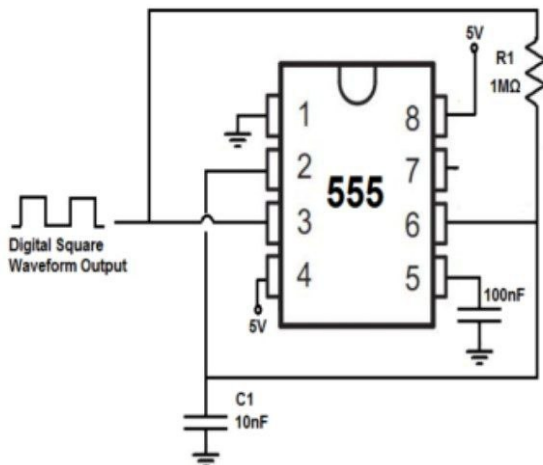


Fig. 1. Connection in 555 timer circuit

- 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 circuitry in such a way that shift registers

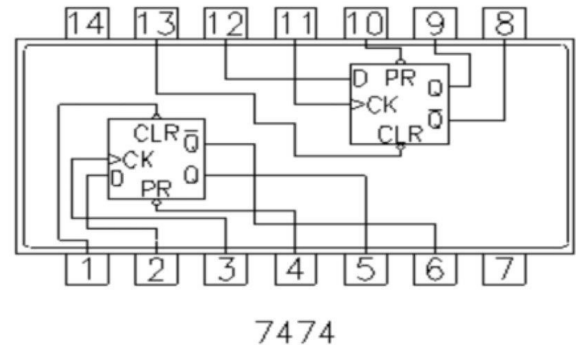


Fig. 3. Connection in 7474 IC

- 4) The next connection is XOR gate (7486 IC) according to the figure 4

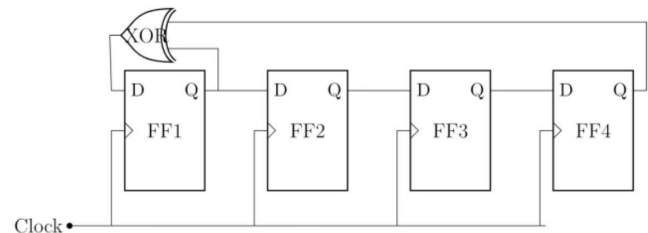


Fig. 4. Connection in XOR gate

- 5) A,B,C,D of the decoder (7447 IC) is connected with Q_0, Q_1, Q_2, Q_3 respectively as per the figure 5
- 6) Final step is to connect the seven segmented display and then connected it with the decoder (7447 IC) according to the table 6 and the figure 6
- 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. 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

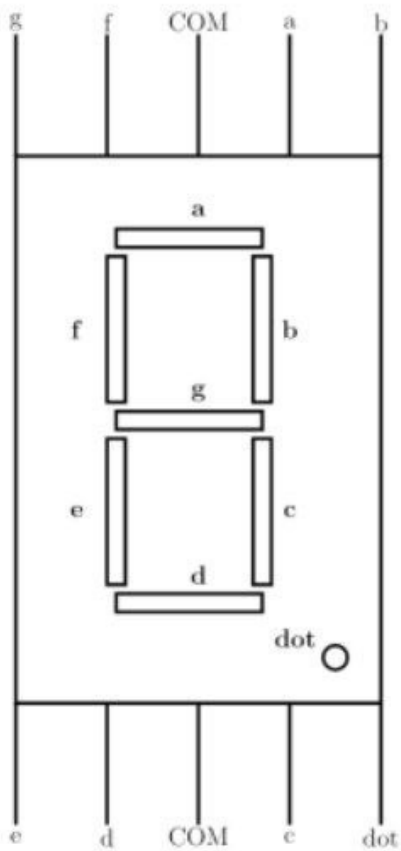


Fig. 6. Seven segmented display

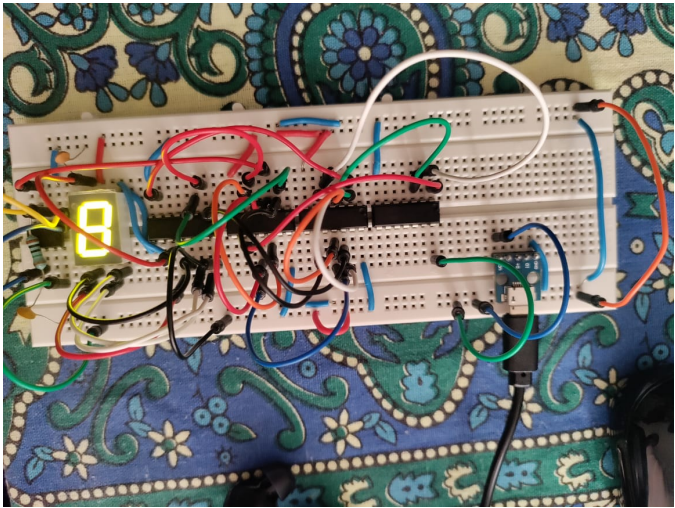


Fig. 7. output