

AI-1110: Hardware Assignment

Random number generator

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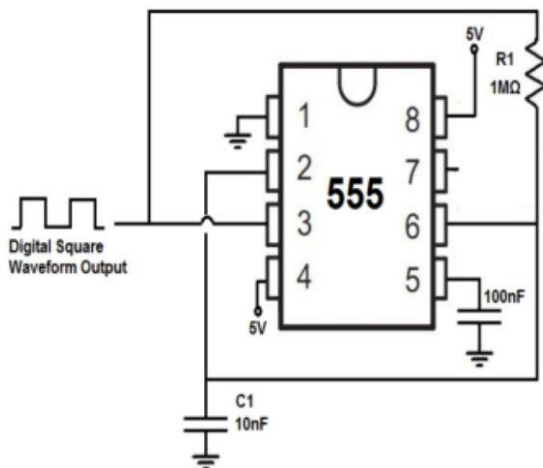
Abstract—In this assignment we made a random number generator using flip flops,ic,XOR,decoder.

COMPONENTS

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		

PROCEDURE

- 1) I connected the 555 timer circuit according to the figure 2
- 2) Then I connected Clock output of 555 timer circuit to the clock signal of D-Flip flops



- 3) Now I made the circuit for shift registers using a 4 D-Flip flops (using two 7474 IC's)

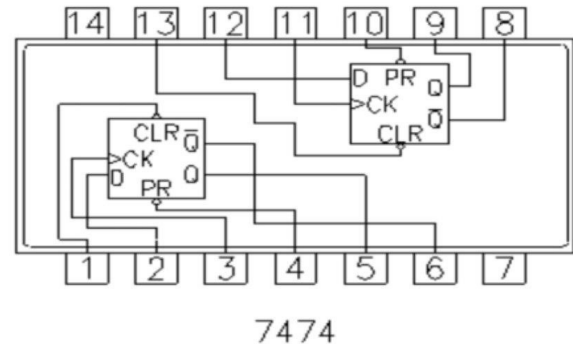


Fig. 3. Connection in 7474 IC

- 4) Then I connected XOR gate (7486 IC) according to the figure 4

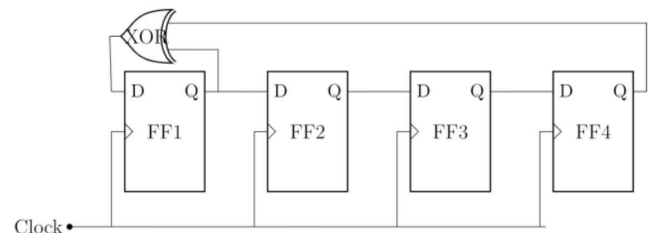


Fig. 4. Connection in XOR gate

- 5) Then I 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 5
- 6) Then I connected The seven segmented display and Then connected it with the dceoder (7447 IC) according to the table 6 and the figure 6
- 7) I connected all the independent parts with each other and then connected the power source

OUTPUT

The seven segment display was displaying various digits continuously, along with them additional figures also occur cause the display can show only a single integer.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

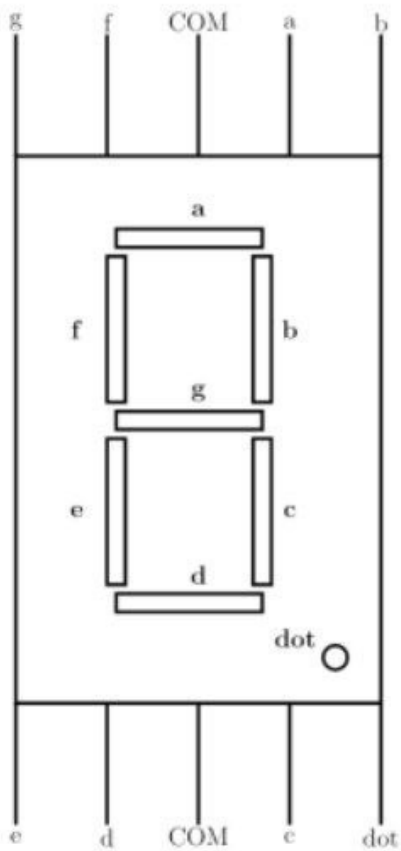


Fig. 6. Seven segmented display

Fig. 7. Final circuit

