

Hardware Project

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

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

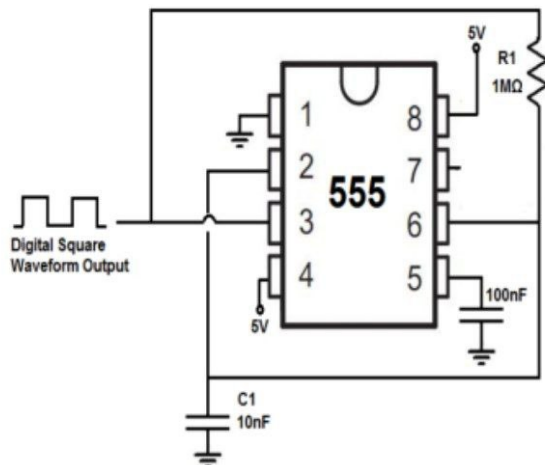


Fig. 1. Connection in 555 timer circuit

- 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)

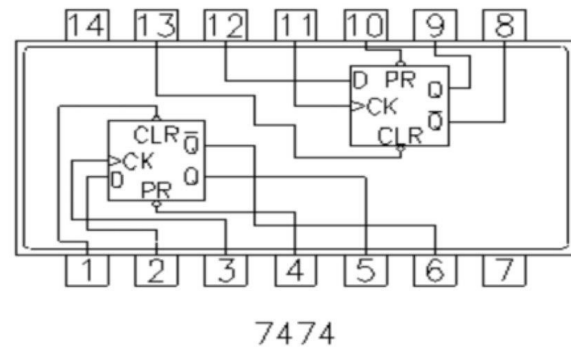


Fig. 3. Connection in 7474 IC

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

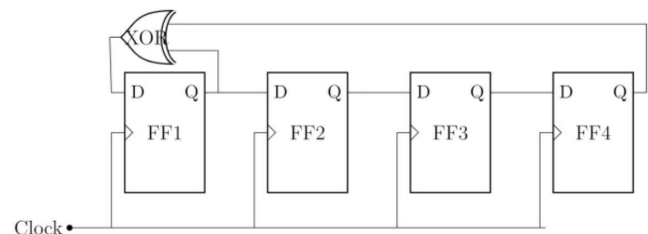


Fig. 4. Connection in XOR gate

- 5) 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 5



Fig. 5. Connection in Decoder gate

- 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

| 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

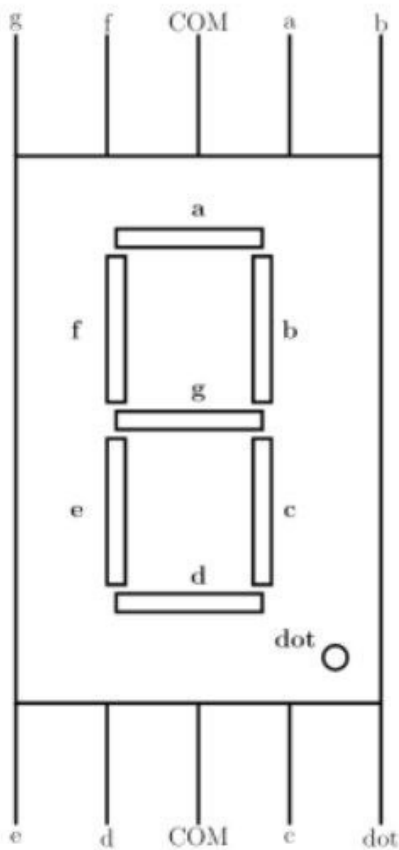


Fig. 6. Seven segmented display

- 7) We connected all the independent parts with each other and then connected the power source

OUTPUT

Output was changing digits on the seven segment display the output is shown in figure 7

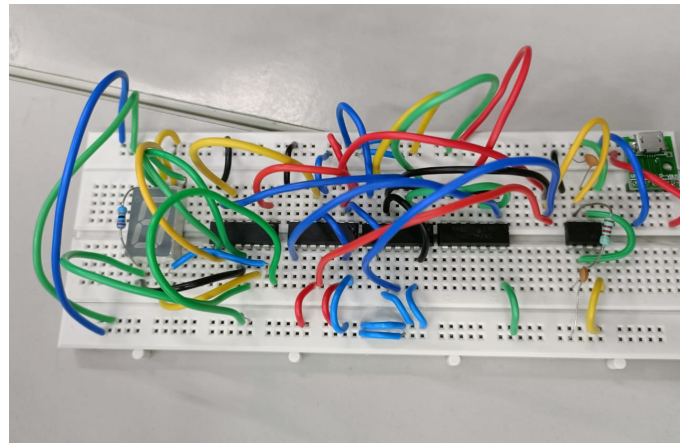


Fig. 7. output