

Hardware Assignment

(Random Number Generator)

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CS22BTECH11028

Abstract—Following is the report for the assignment in which I made a random number generator using shift registers.

I. 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 KΩ	1
Capacitor	100 nF	1
Capacitor	10 nF	1
Jumper Wires		

TABLE I

II. CONNECTIONS

- 1) The 555 timer circuit is wired as shown in figure ??.

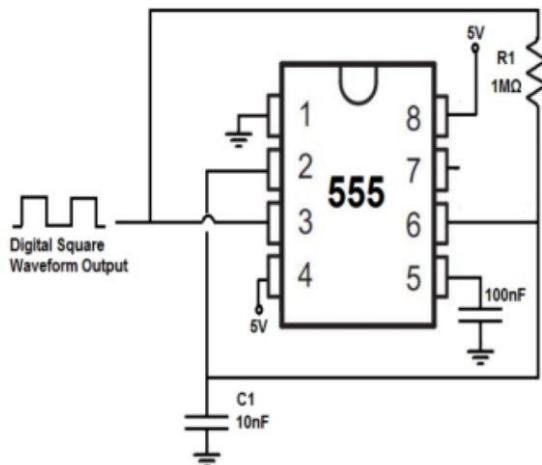


Fig. 1. 555 Timer Circuit

- 2) The CLOCK signal of the D-Flip flops is connected to the CLOCK output of the 555 timer circuit.
- 3) The shift register circuit is made up of one X-OR gate (7486 IC) and four D-Flip flops (using two 7474 ICs), as shown in figure ??

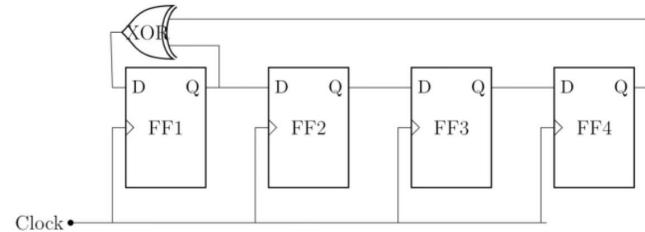


Fig. 2. Connection of 7474 IC's with XOR gate

- 4) The circuit connections of 7474 IC's are as shown in figure ??

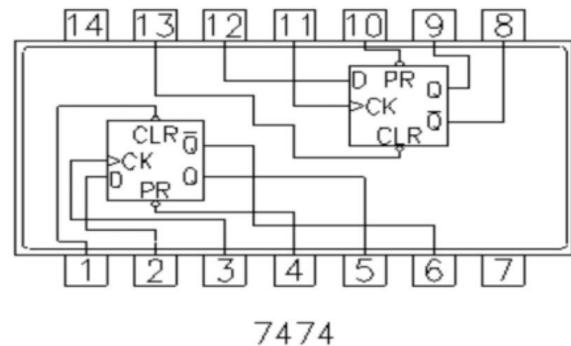


Fig. 3. Connections in 7474 IC

- 5) Each D-Flip flop's output is coupled to the Decoder IC (7447 IC) as indicated in figure ??
- 6) In accordance with the figure ?? and figure ??, the seven segmented display is linked to the decoder 7447 IC.
- 7) Each individual circuit is connected to the power supply, as well as to each other.



Fig. 4. Connections of 7447 IC

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. Connections of seven segmented display with decoder

III. OUTPUT

This circuit arrangement produces randomly changing numbers on the display as shown in figure ??

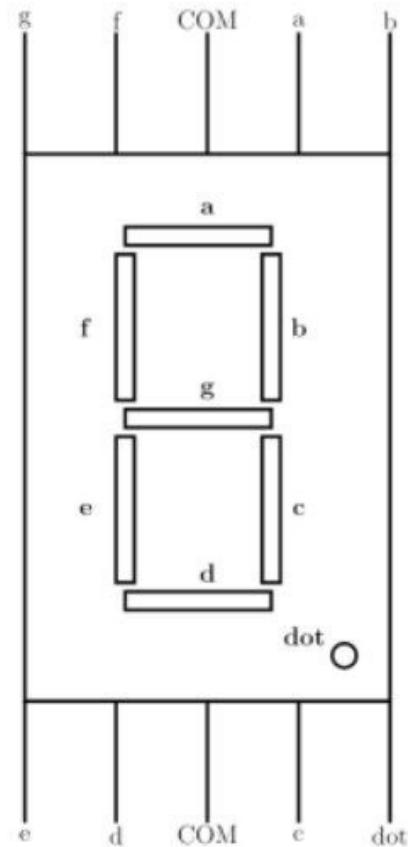


Fig. 6. Seven Segmented Display

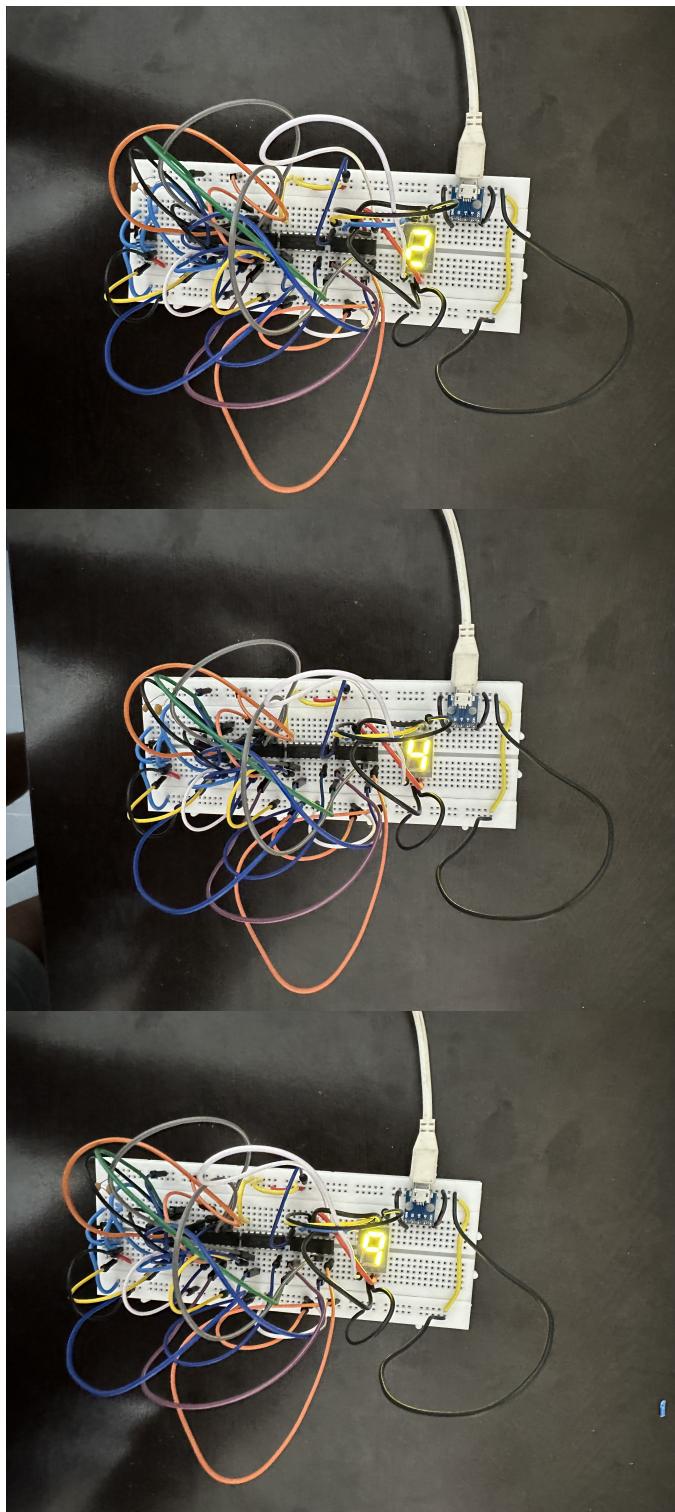


Fig. 7. Output