Random Number Generator

Name:Anshika Gupta
Roll no:CS22BTECH11007

***Abstract*—Here, we have made a Random Number Generator using Shift Registers**

Component	Value	Quantity
Seven Segment Diplay	Common Anode	1
X-OR Gate	7486	1
555 IC		1
Decoder	7447	1
Flip Flop	7474	2
Breadboard		1
Resistor	1 KΩ	1
Capacitor	100 nF	1
Capacitor	10 nF	1
Jumper Wires		20

TABLE I
APPARATUS

PROCEDURE

1) First, connect the 555 timer circuit to generate a Square Waveform Output as shown in figure 1

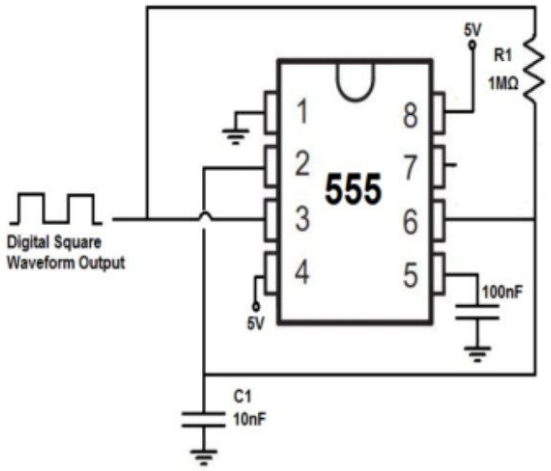

Fig. 1. 555 timer circuit

2) Then, connect the CLOCK output of 555 timer circuit to CLOCK signal of D-Flip flops.
3) Now, the circuit for shift registers is made using 4 D-Flip flops. First, use the use two 7474 ICs. The pin out for 7474 IC is shown in figure 2

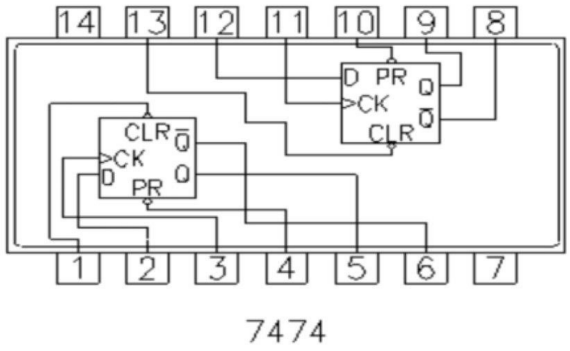

Fig. 2. Pin out of 7474 IC

4) Then, connect the XOR gate (7486 IC) to the system of D-Flip flops as shown in figure 3

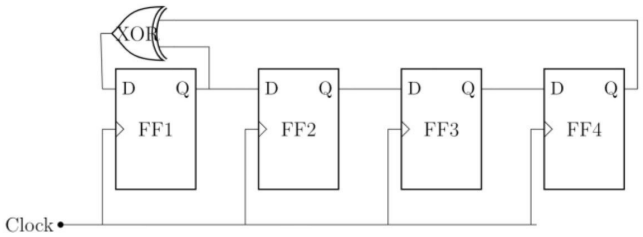

Fig. 3. Circuit connections

5) Then, connect the decoder (7447 IC) and connect its A,B,C,D with Q_0,Q_1,Q_2,Q_3 (outputs of the D-Flip flops) respectively as per the figure 4
6) Make connections between the seven segment display and the decoder(7447 IC) by referring to table 5 and figure 6
7) Finally, connect all the independent parts with each other and then connect the circuit to a power source.

Fig. 4. Pin out of 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. 5. Connection of seven segmented display with decoder

Observation

We get continuously changing digits on the seven segment display. The Output is shown in figures 7,8 and 9

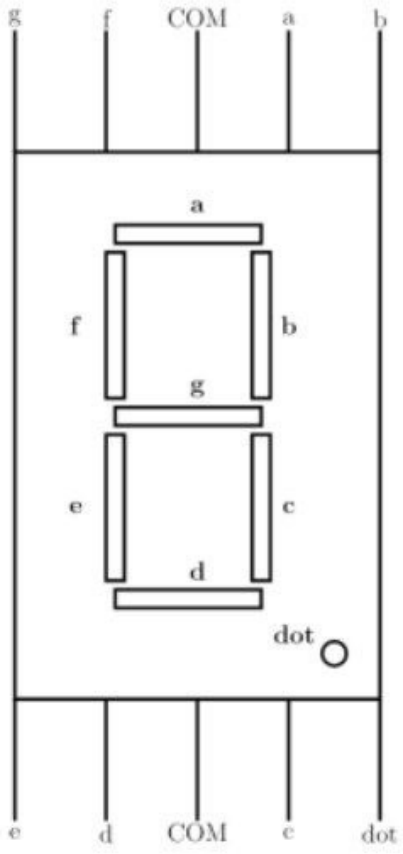

Fig. 6. Seven segmented display

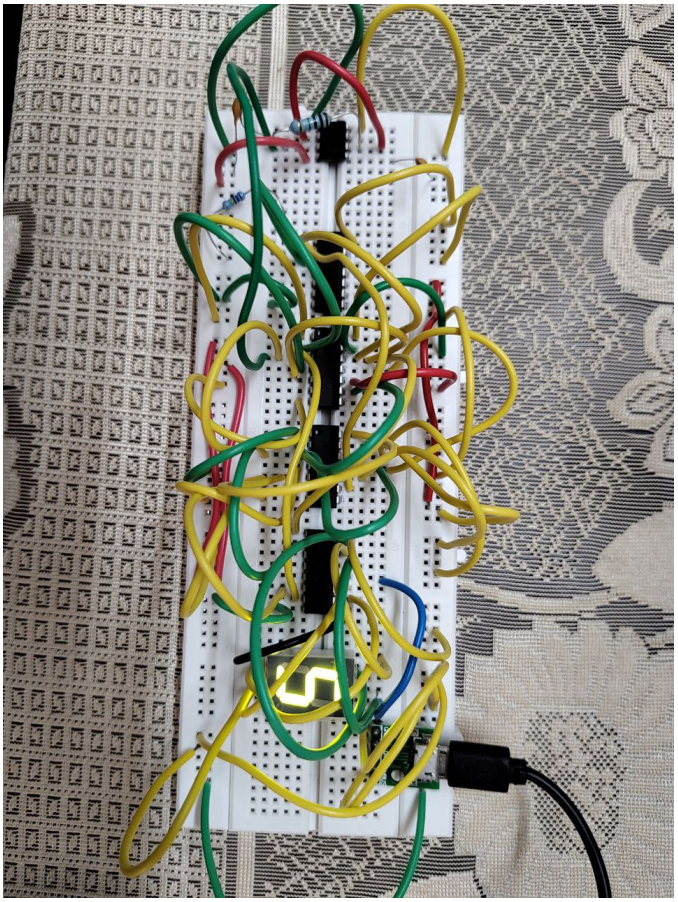

Fig. 7. Output1

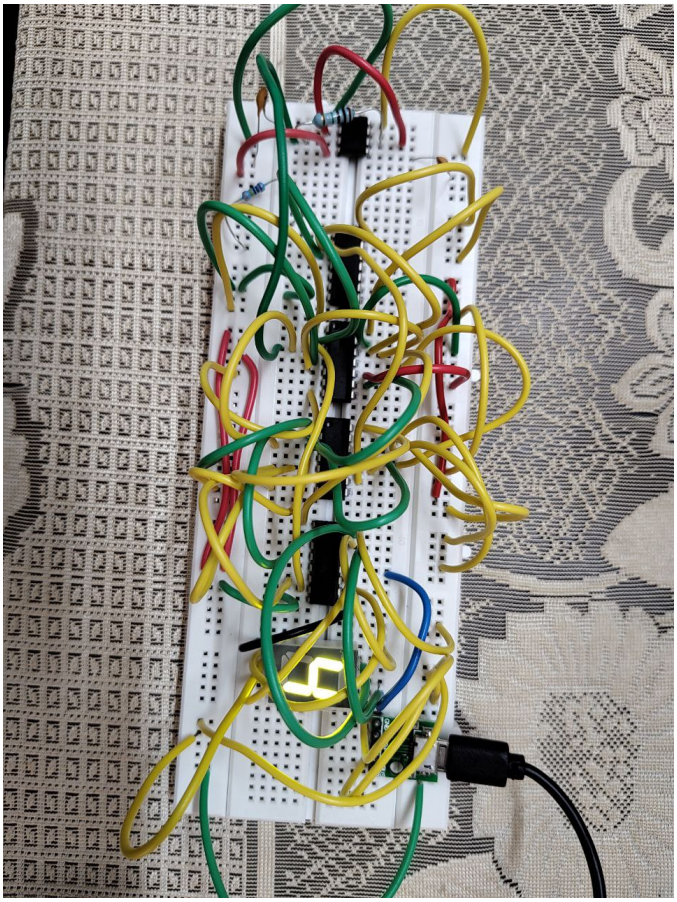

Fig. 8. Output2

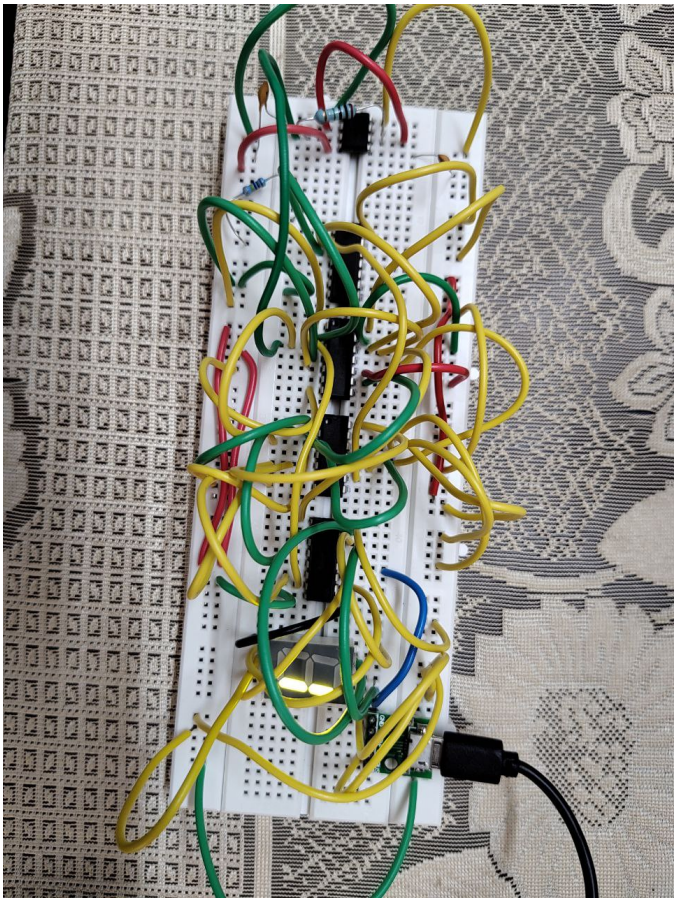

Fig. 9. Output3

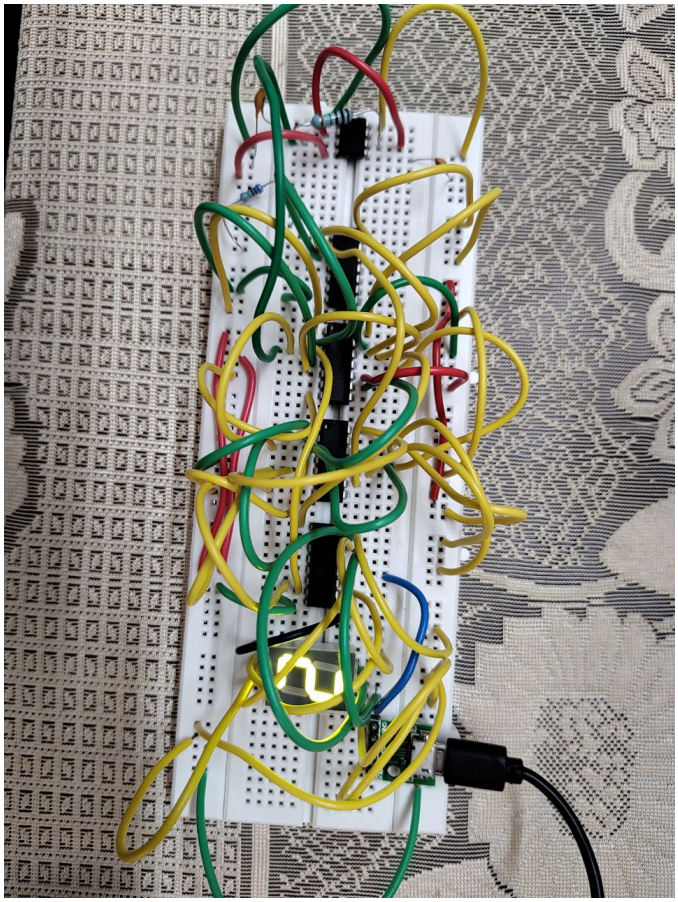

Fig. 10. Output4