AI1110 : Probability And Random Variables Hardware Report

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***Abstract*—In this assignment we have made a Random Number Generator using Shift Registers**

COMPONENTS USED

Component	Value	Quantity
Breadboard		1
Seven Segment Diplay	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		

PROCEDURE

1) Connect the 555 timer circuit according to the figure 1.

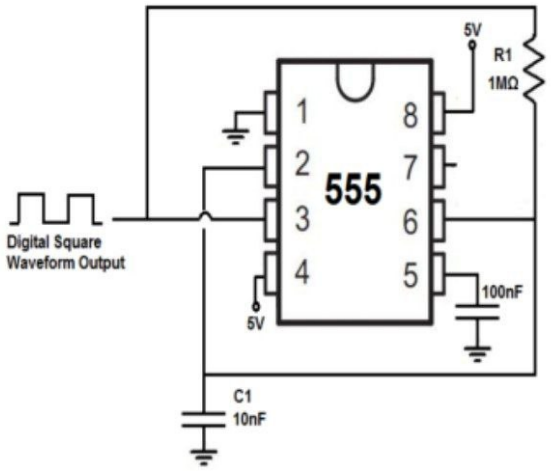

Fig. 1. Connection in 555 timer circuit

2) Then connect Clock output of 555 timer circuit to the clock signal of D-Flip Flops.

3) Now make the circuit for shift registers using 4 D-Flip Flops 2 7474 IC's).

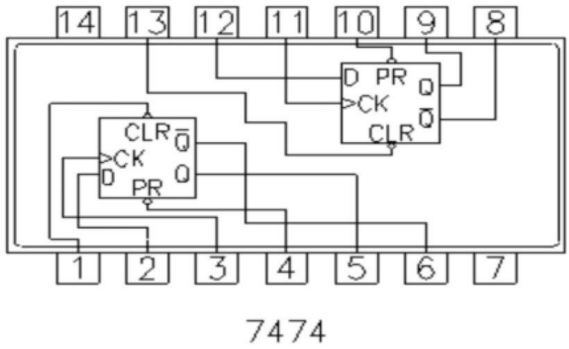

Fig. 3. Connection in 7474 IC

4) Then connect XOR gate (7486 IC) according to the figure 4.

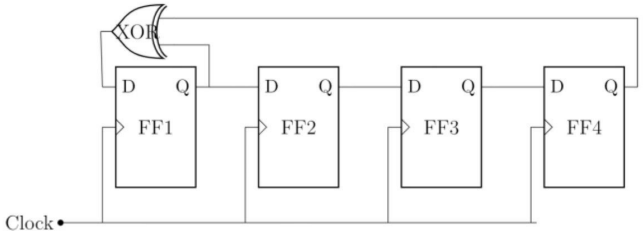

Fig. 4. Connection in XOR gate

5) Then connect the Decoder (7447 IC) and A, B, C, D with Q_0, Q_1, Q_2, Q_3 respectively as per the figure 5.
6) Then connect the SSD with the Decoder (7447 IC) according to figure 6.

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

7) Connect all the independent parts with each other and then connect to the power source.

Output

Changing digits on the SSD as shown in figure 7.

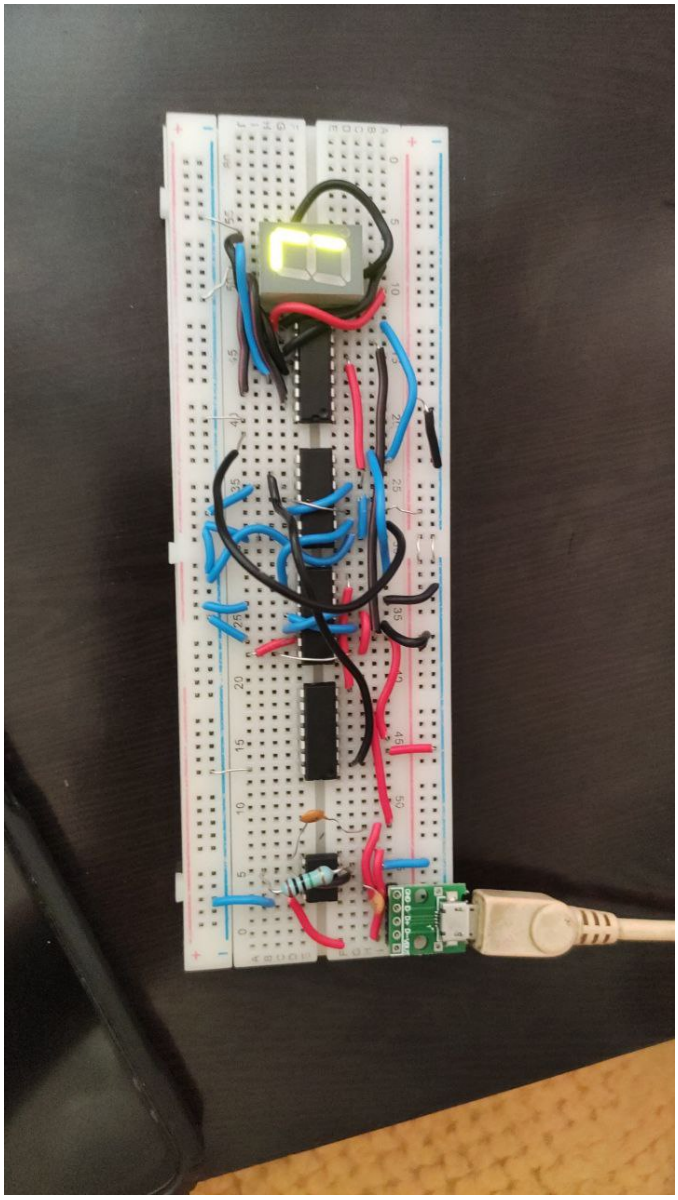

Fig. 7. Output