# AI1110 : Probability And Random Variables Assignment 1

## Soham Rajesh Pawar CS22BTECH11055

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 ΚΩ	1	
Capacitor	100 nF	1	
Capacitor	10 nF	1	
Jumper Wires			

#### Procedure

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

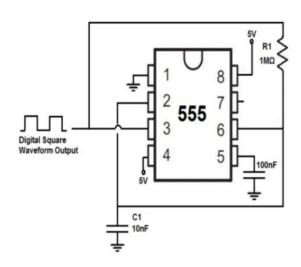


Fig. 1. Connection in 555 timer circuit

- 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).

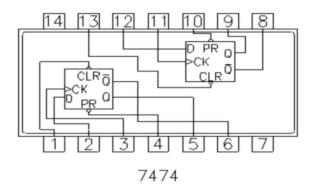


Fig. 3. Connection in 7474 IC

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

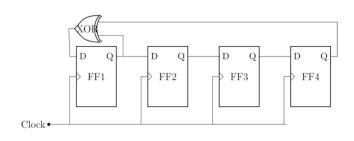


Fig. 4. Connection in XOR gate

- 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.

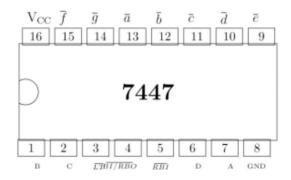


Fig. 5. Connection in Decoder gate

7447	$\bar{a}$	$\bar{b}$	$\bar{c}$	$\bar{d}$	$\bar{e}$	$\bar{f}$	$\bar{g}$
Display	a	b	С	d	е	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.

### **O**UTPUT

Changing digits on the SSD as shown in figure 7.

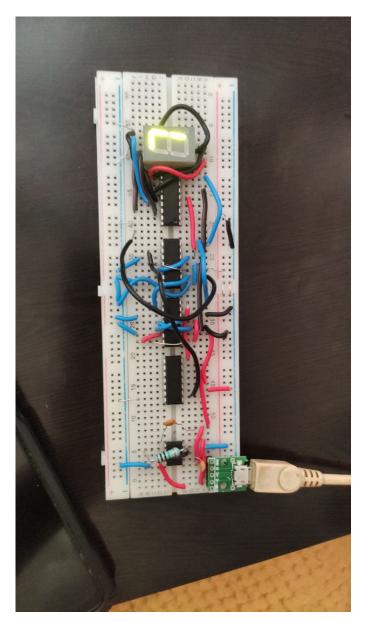


Fig. 7. Output