

# AI-1110: Hardware Assignment

## Random number generator

Name : Kartikeya Mandapati  
Roll no -: CS22BTECH11032

**Abstract**—In this assignment we made a random number generator using flip flops,ic,XOR,decoder.

### COMPONENTS

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 $\Omega$	1
Capacitor	100 nF	1
Capacitor	10 nF	1
Jumper Wires		

### PROCEDURE

- 1) I connected the 555 timer circuit according to the figure ??
- 2) Then I connected Clock output of 555 timer circuit to the clock signal of D-Flip flops
- 3) Now I made the circuit for shift registers using a 4 D-Flip flops (using two 7474 IC's)
- 4) Then I connected XOR gate (7486 IC) according to the figure given in the instruction
- 5) Then I 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
- 6) Then I connected The seven segmented display and Then connected it with the dceoder (7447 IC) according to the table ?? and the figure 7
- 7) I connected all the independent parts with each other and then connected the power source

### OUTPUT

The seven segment display was displaying various digits continuously, along with them additional figures also occur cause the display can show only a single integer.



Fig. 5. Connection in Decoder gate

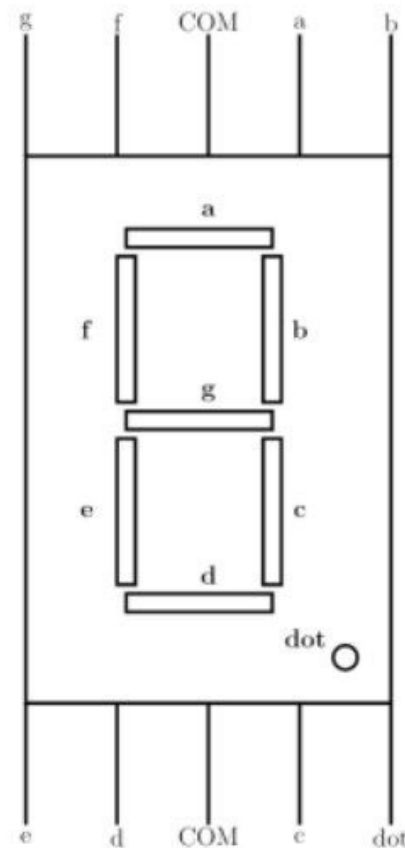


Fig. 6. Seven segmented display

Fig. 7. Final circuit

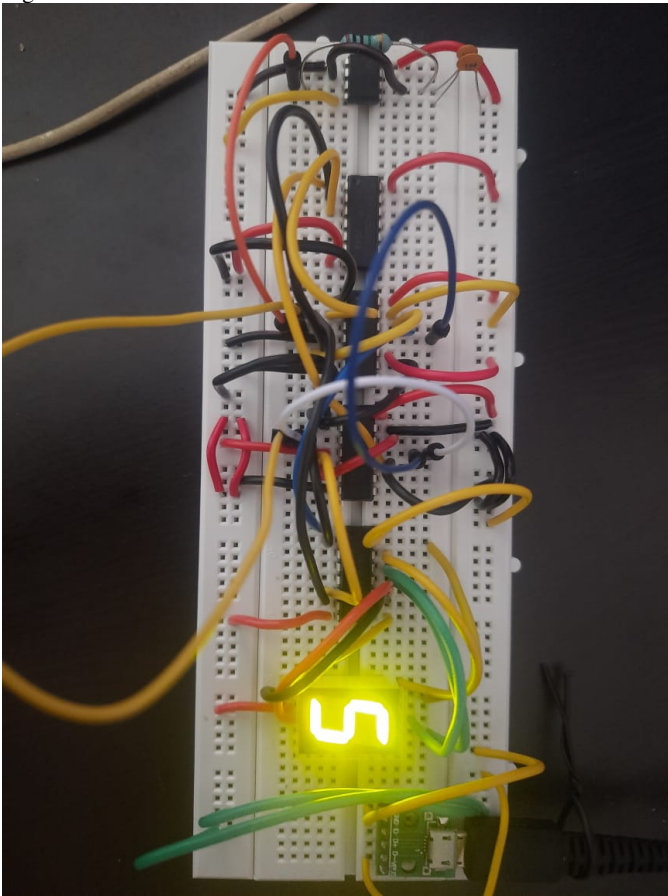


Fig. 7. Final circuit

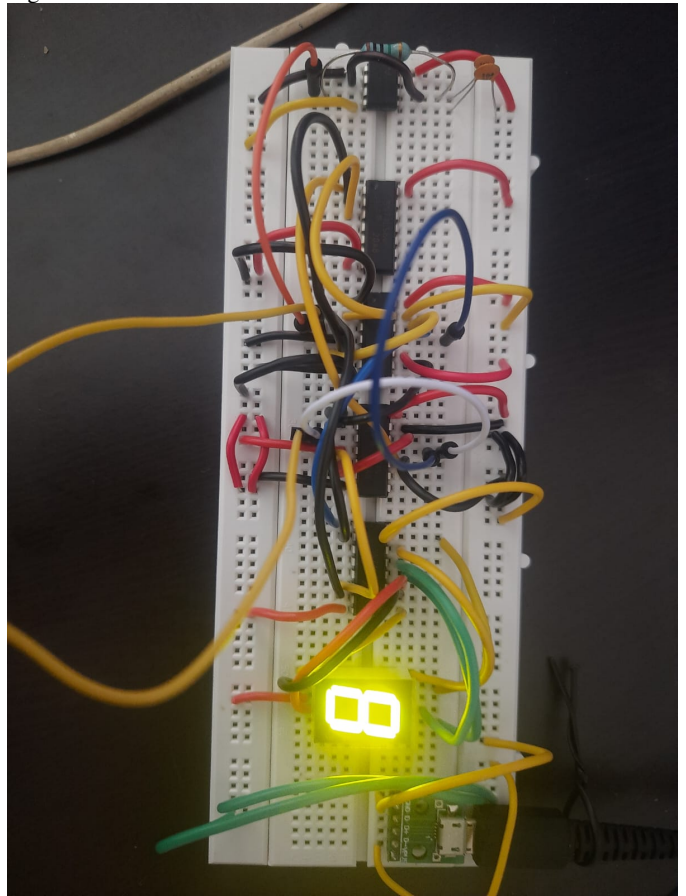


Fig. 7. Final circuit

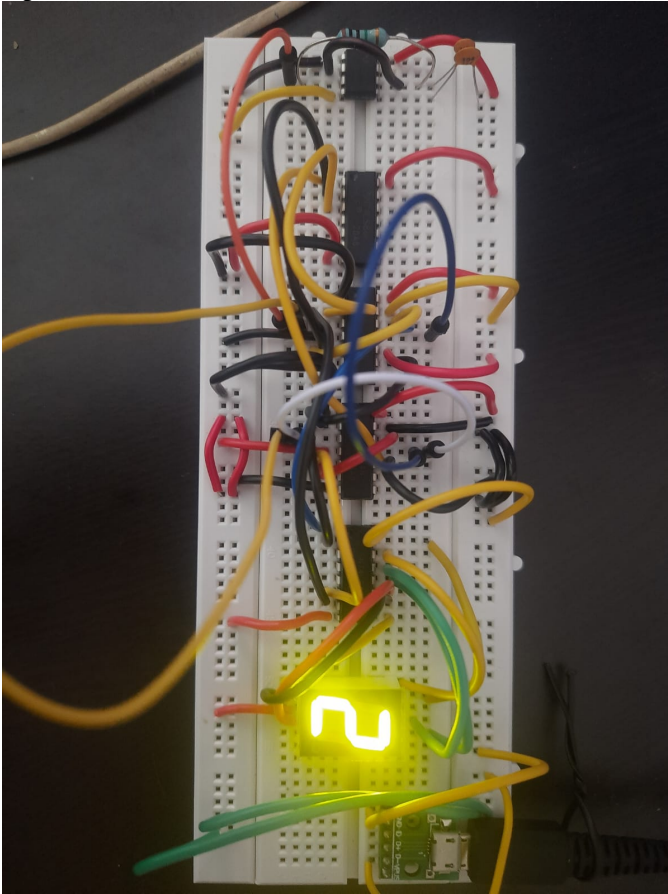
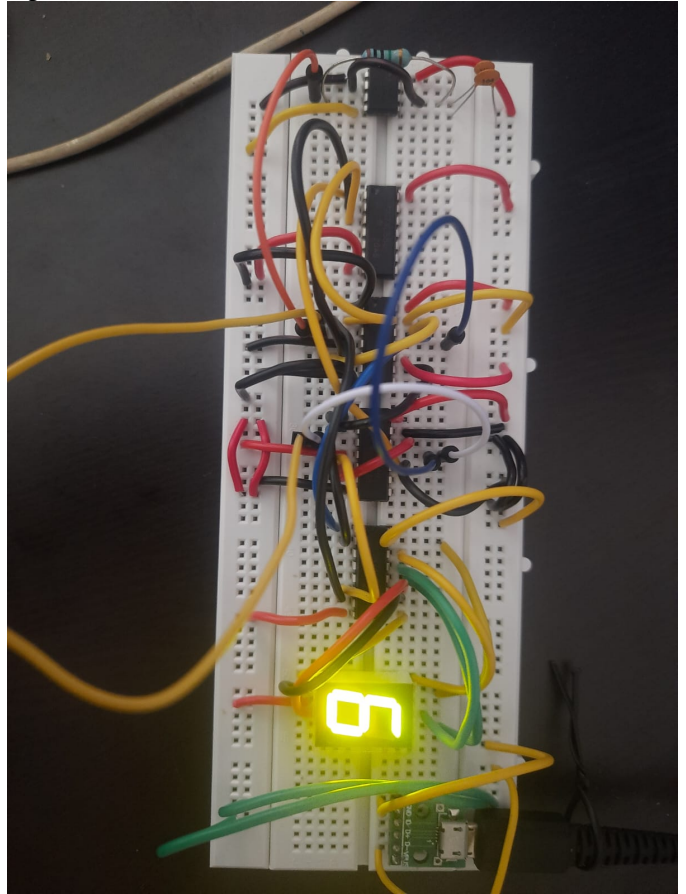


Fig. 7. Final circuit



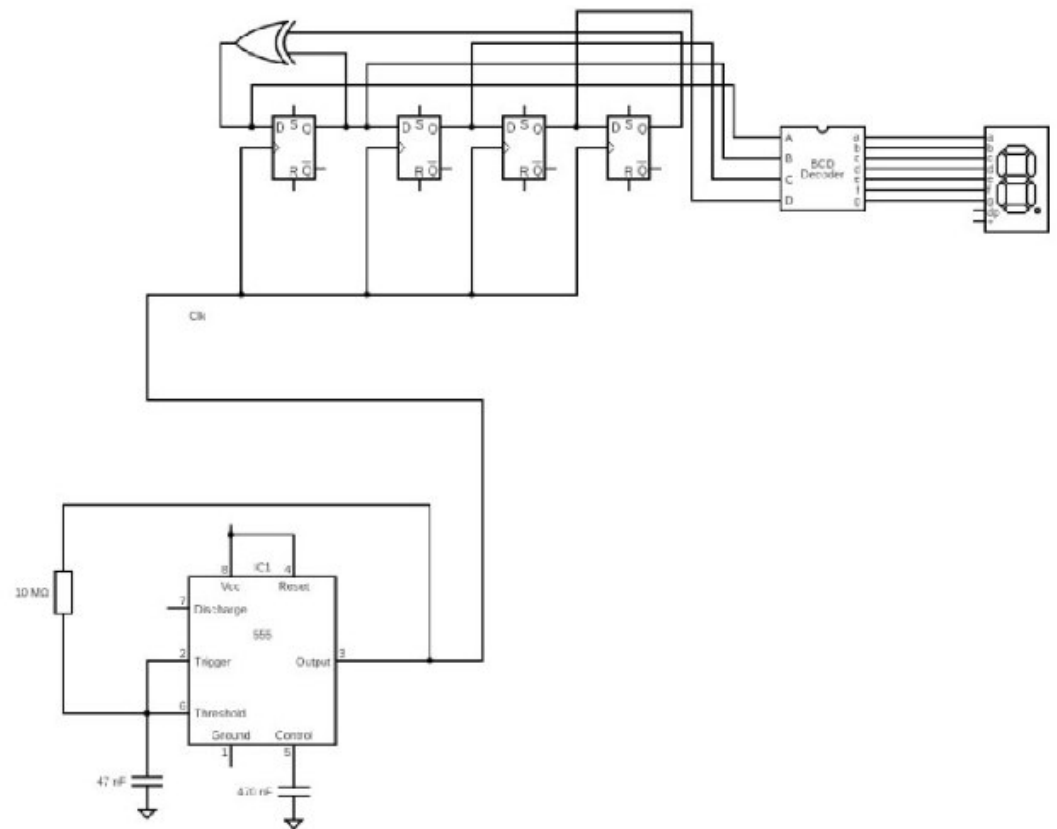


Fig. 7. BLOCK DIAGRAM