# AI1110
# HARDWARE ASSIGNMENT REPORT

## SOMALARAJU BHAVYA SHLOKA
## CS22BTECH11056

## 1 COMPONENTS LIST

| 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 | 1Kilo Ohm | 1 |
| Resistor | 1Mega Ohm | 1 |
| Capacitor | 100nF | 1 |
| Capacitor | 10nF | 1 |
| Wires | | 6 |
| Micro USB | | 1 |

## 2 DESCRIPTION

1) First, we should provide the complete setup with a power source ,which is given through a MicroUSB cable.

2) The positive terminal of the input(shows 5V generally) and the negative terminal is grounded(i.e, voltage is 0) are connected to the 555 IC.

3) The 555 IC along with 2 Capacitors of 100nF capacitance each and a resistor of resistance 10MOhms(known as Clock as a whole) takes the input pulse and converts it into a square pulse so that binary digits 0,1 can be stored as Trough and Crest respectively.

4) Now, this square pulse is sent to the 7474 IC's each having 2 Flip-Flops ,where 4 bits of binary digits(each 1 bit through each FLIP-FLOP) are outputted randomly by using a 7486 IC which is a X-OR GATE.

5) The 4 bits binary number is sent to 7447 IC (known as Decoder) which converts the 4 bits into a 7 bit binary number and is sent to the 7 Segment Display.

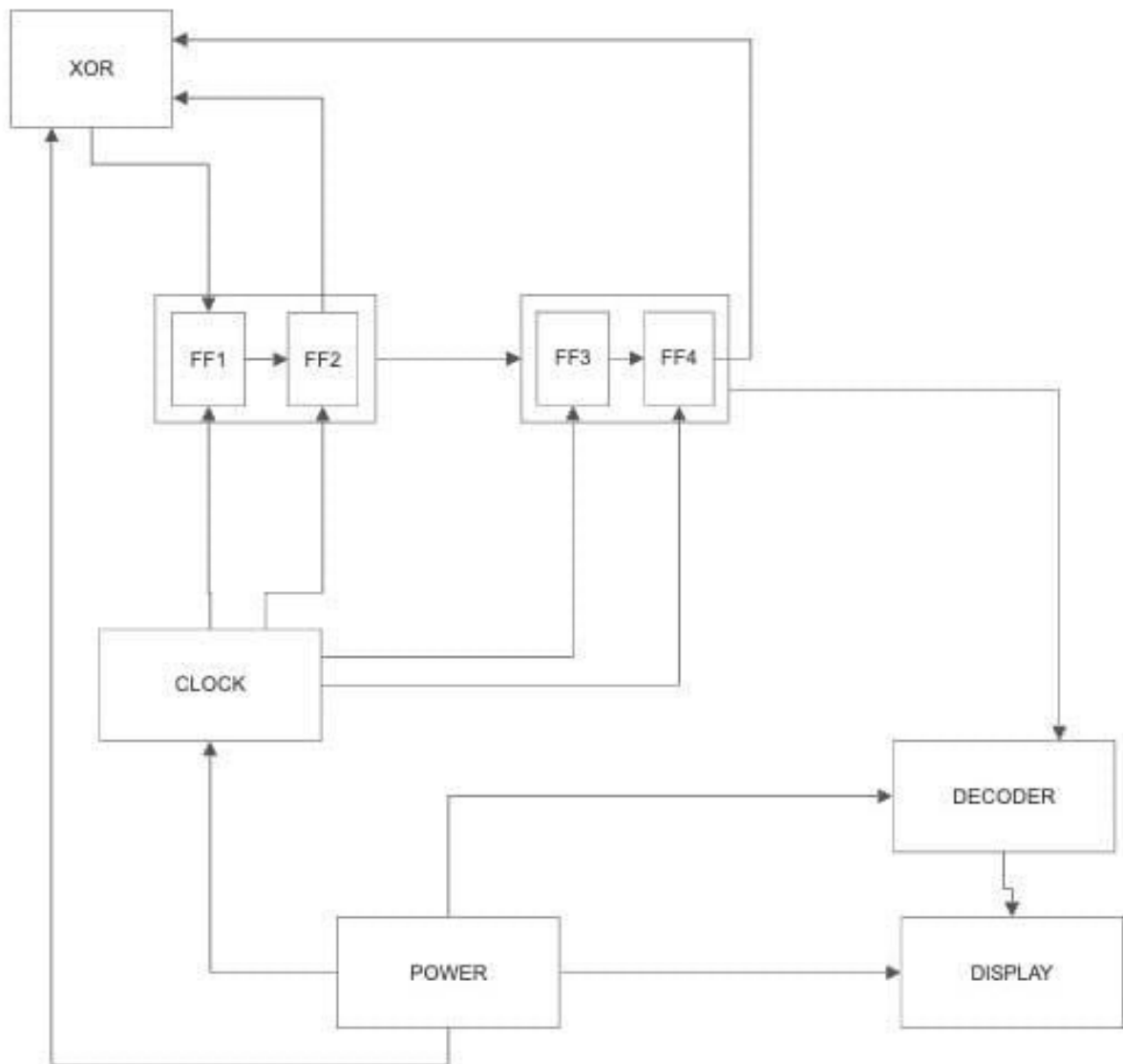6) The 7 Segment Display contains 8 Cathodes and a Common Anode. When a cathode re-

ceives 1 then the segment connected to it lights up.

7) Finally ,the common anode is connected to Vcc throughn a resistor 1KOhms. The output on the 7 Segment Display will be random numbers from 1-9 and some other symbols for other numbers.

## 3 OUTPUT IMAGES
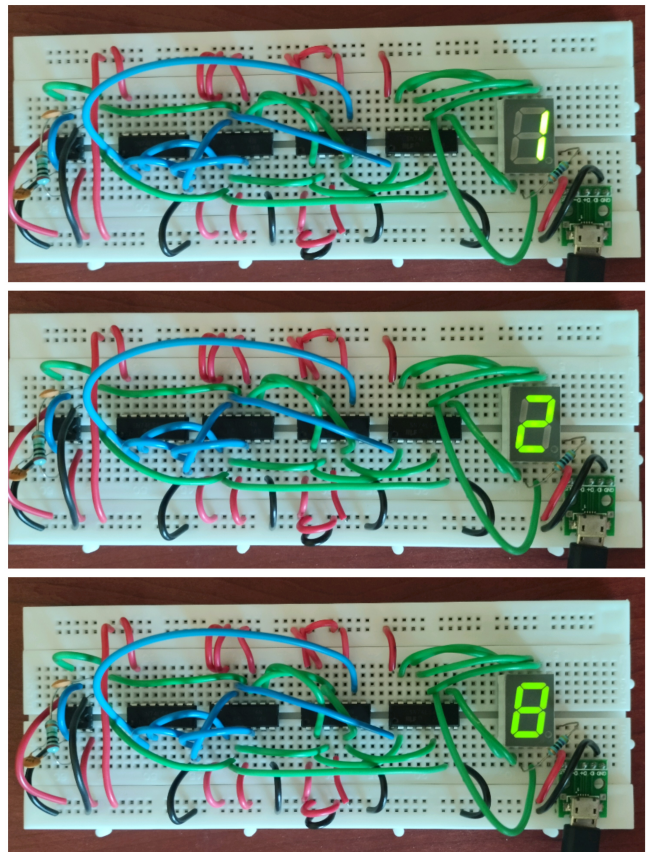


## 4 BLOCK DIAGRAM

**Circuit diagram**