

AIM:

To construct a 4-bit counter that counts from 0 to 15 and the appropriate decimal is displayed on the 7-Segment Display.

Components Required:

S.No	Components	Specification	Quantity
1	Timer IC	NE555	1
2	Counter IC	IC 74LS163	1
3	Magnitude Comparator	IC 74LS85	1
4	Full Adder	IC 74LS83	1
5	BCD Driver	IC 74LS47	2
6	7-Segment Display	Red Colour	2
7	LED	5.0 mm	1
8	Resistor	16k Ω , 64k Ω , 220 Ω , 330 Ω	1,1,1,14
9	Power Source	---	1

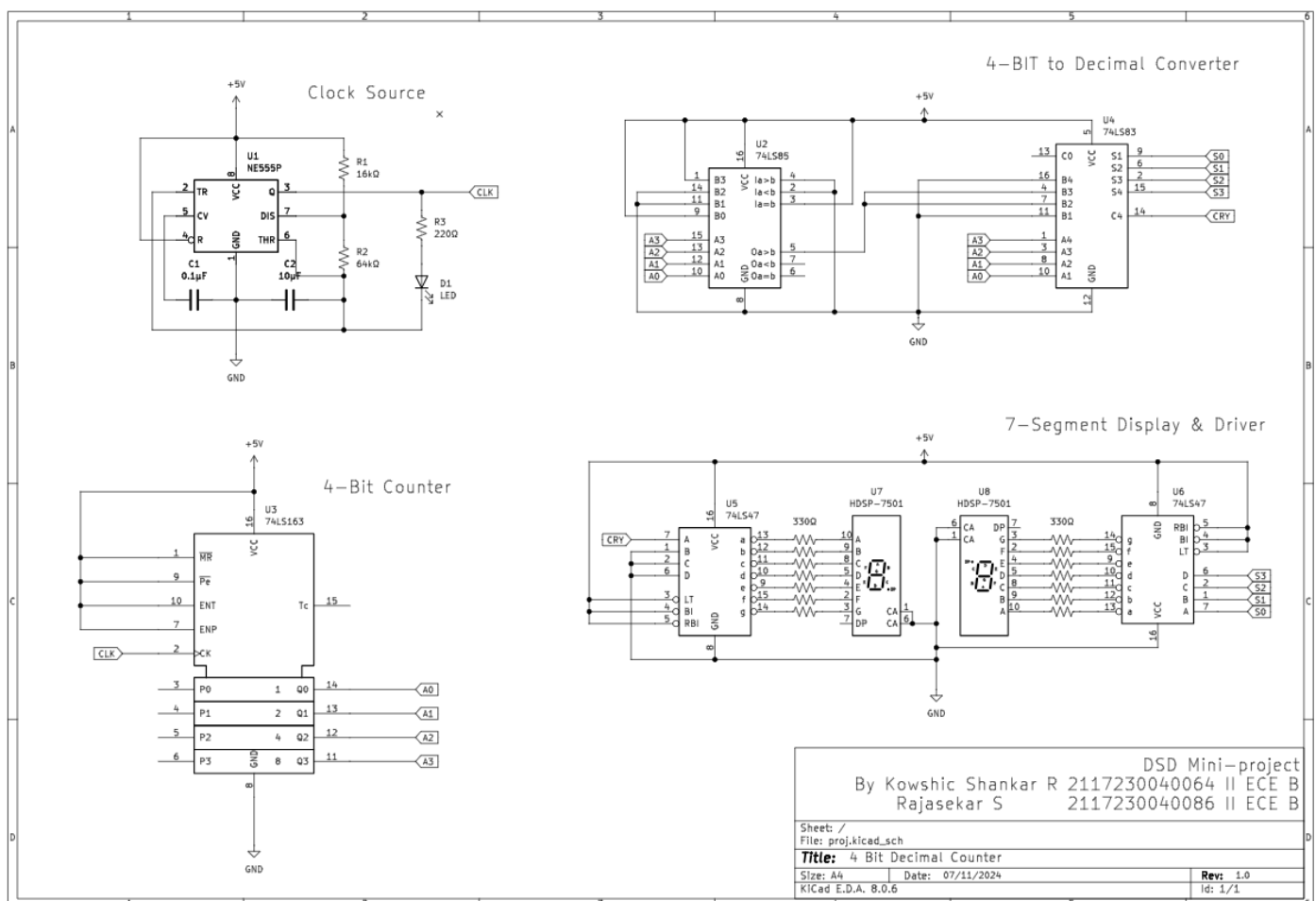
Theory:

This project aims to output a loop from 00 – 15 in two separate 7 – Segment Displays. This is achieved using a 4 – bit counter whose clock source is generated from NE555 Timer IC. The output of the counter is given to a magnitude

comparator to compare with 9 and the greater than output is given to the full adder which adds 6 , if the output from Magnitude Comparator's $A > B$ is 1.

The Sum Output from the Full Adder is then given to the Display Driver which is connected to a 7 – Segment Display. The carry output is also connected to the LSB of another Display Driver which is responsible for displaying the Tenth's place.

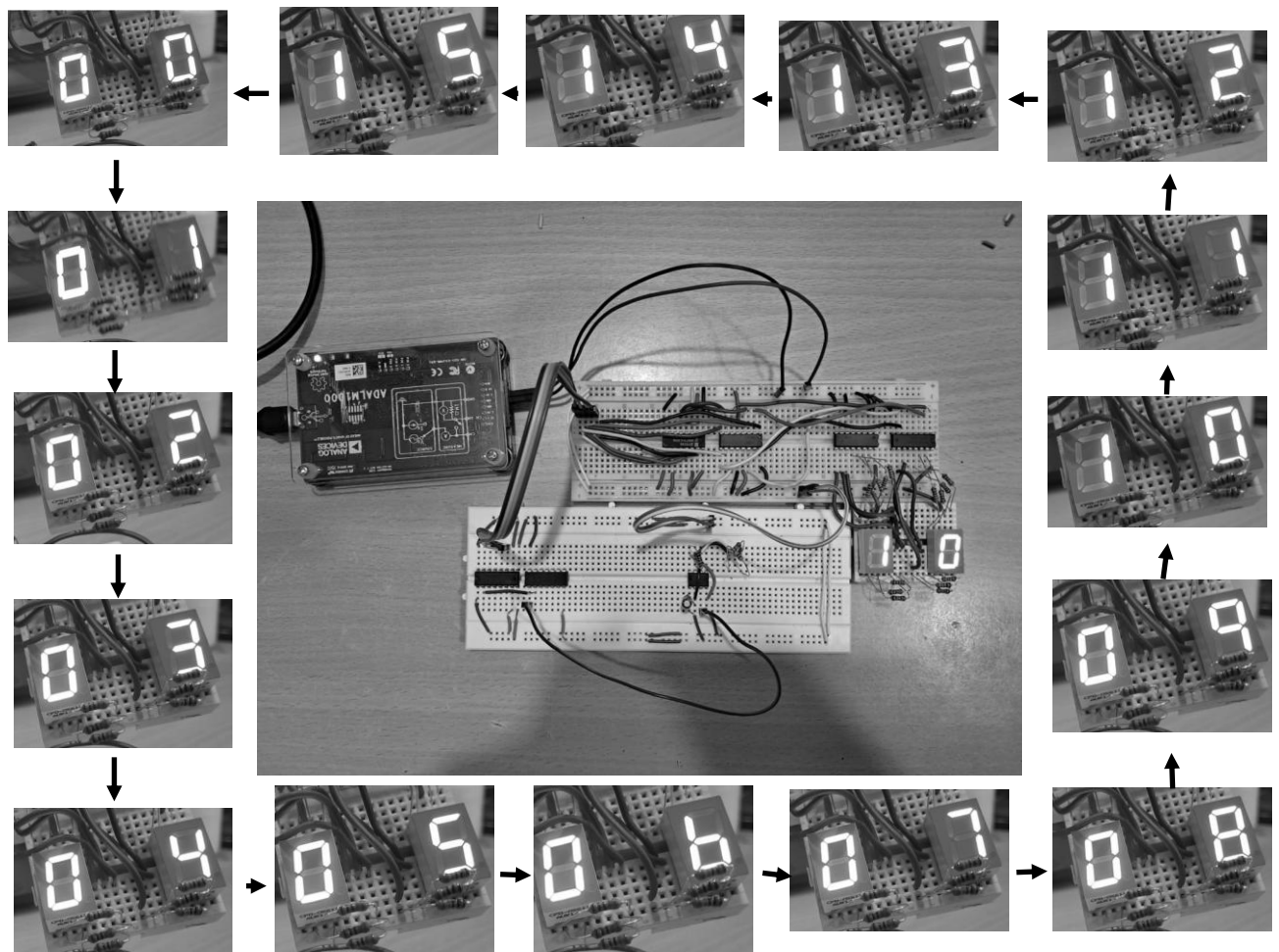
Schematic Diagram:



Procedure:

- 1) Give the connections as per the Circuit Diagram.
- 2) Connect the circuit to the power source & check for any heating or short circuit.
- 3) Check the output which should count up from 00 to 15 in a loop.

Output:



Inference and Conclusion:

Thus the 4 – Bit Decimal counter with 7 Segment Display is constructed and the output on the display is verified.