

Probability Hardware Assignment

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COMPONENTS USED

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 Ω	1
Capacitor	100 nF	1
Capacitor	10 nF	1
Jumper Wires		

TABLE 0
COMPONENTS USED

DESCRIPTION OF CIRCUIT - SETUP

- 1) This circuit uses 5V from microusb, which acts as the VCC of the circuit.
- 2) The outer buses act as the VCC.
- 3) The bottom-inner bus acts as the ground
- 4) The top-inner bus carries the clock signal from the 555 timer.
- 5) The components are linked in accordance to the tables given.

DESCRIPTION OF CIRCUIT - WORKING

- 1) The Flipflops take clock from the clock bus and based on their initial state, output a sequence of numbers.
- 2) The sequence is fixed and if the circuit is operated without concern for the initial state, the output number shown is generated randomly from 1 to 15 (both inclusive), with equal probability of all of them.
- 3) The decoder is able to show numbers from 0 to 15, and the ABCD formed by the flipflops do not become 0000 at any point of time.
- 4) The time period can be changed using different values of Resistor and Capacitor.

OUTPUT AND BLOCK DIAGRAM

The following is pictures of the random numbers generated and the block diagram of the circuit

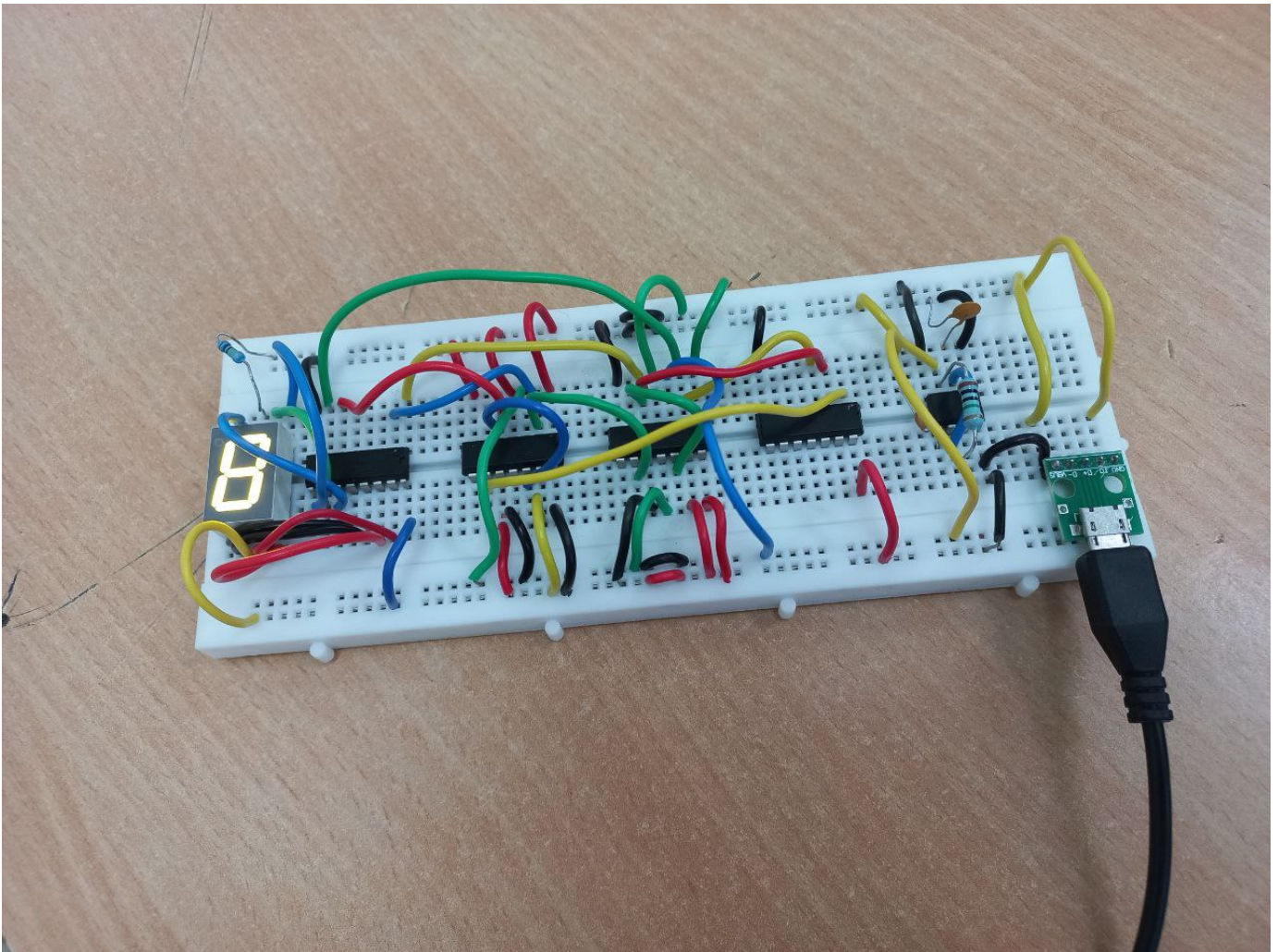


Fig. 4. output

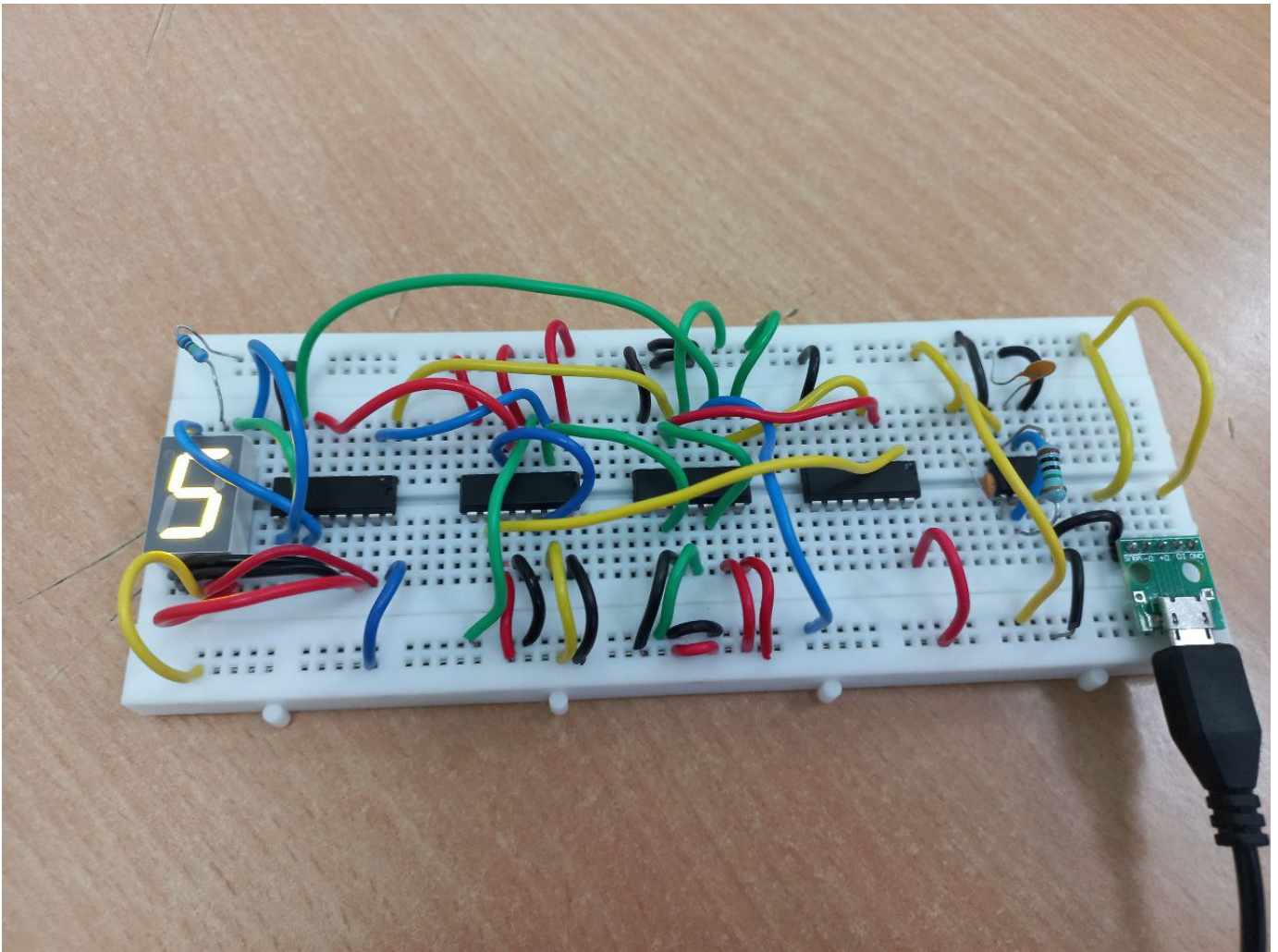


Fig. 4. output

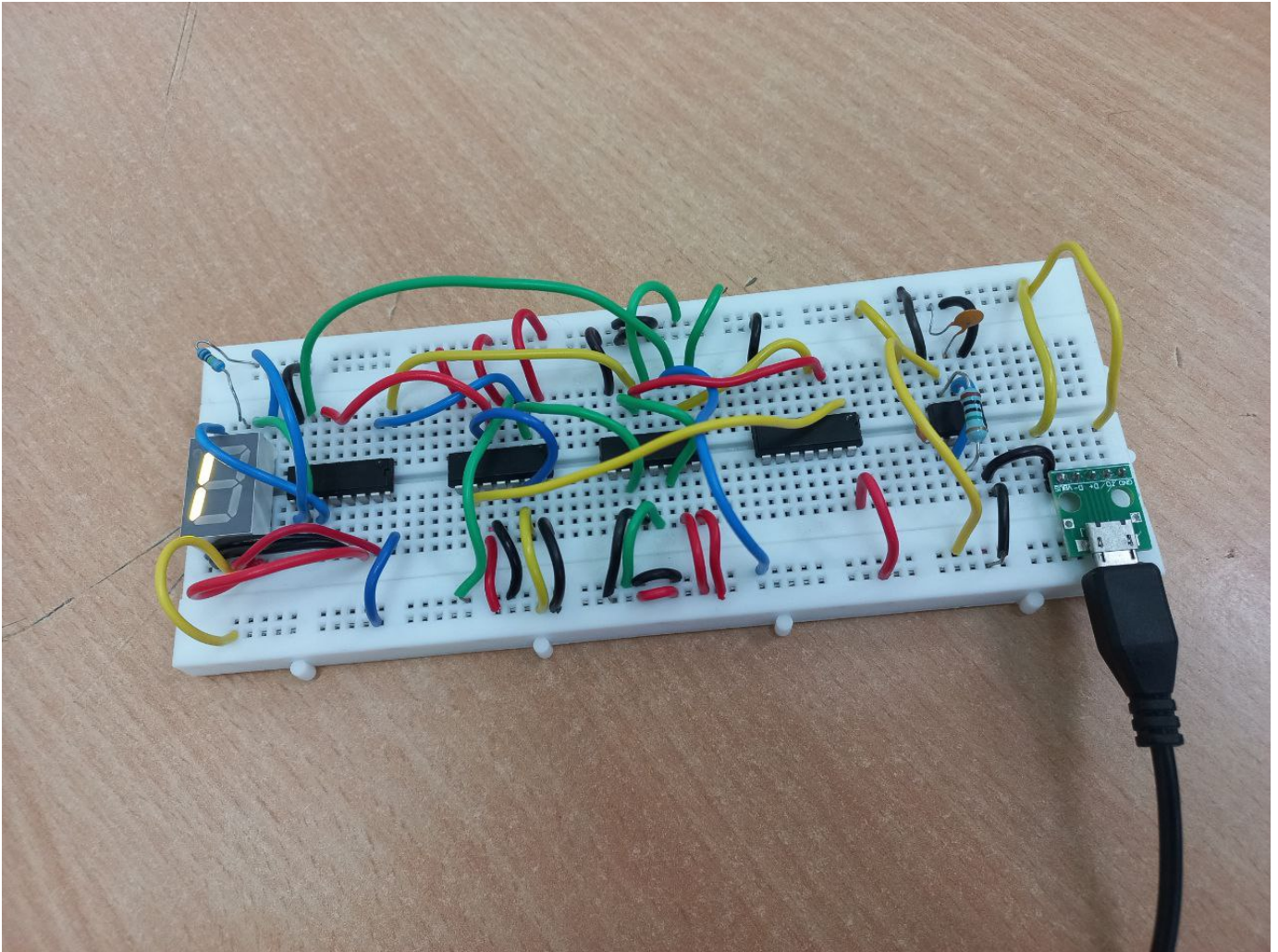


Fig. 4. output

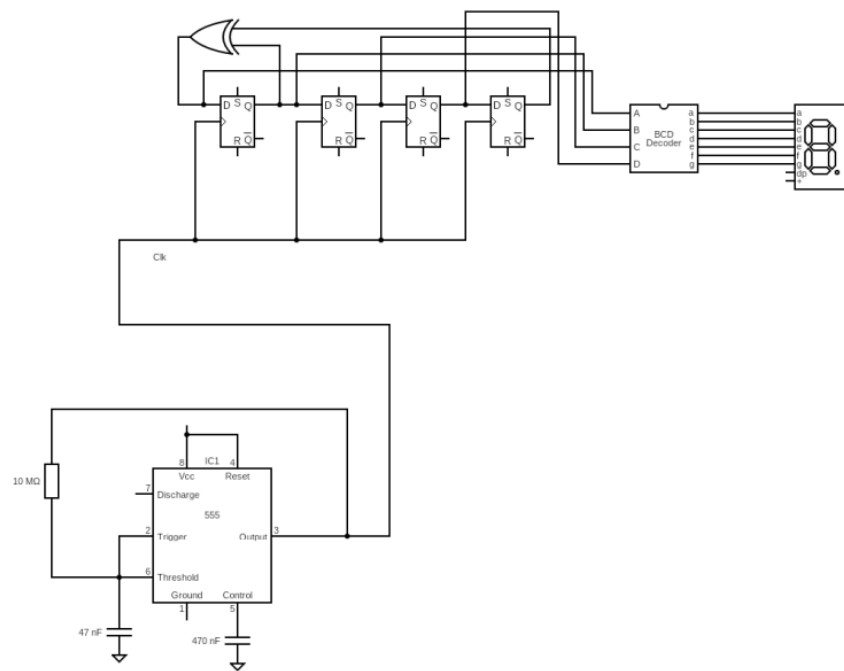


Fig. 4. Block Diagram