

# Hardware Assignment Report

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## 1 Aim

To make a Random Number Generator using Shift Generators

## 2 Components

1. Breadboard
2. Seven Segment Display : Common Anode
3. Seven Segment Display Decoder [7447]
4. FlipFlop [7474] x2
5. XOR gate [7486]
6. 555 IC
7. Resistors [10M $\Omega$ , 1K $\omega$  x2]
8. Capacitors [47nF,470nF]
9. USB micro B breakout board
10. Jumper wires

## 3 Description

The given circuit is a visual representation of how random variables can be connected to signal processing. When considering the usage of a circuit with a seven-segment display in relation to random variables, it typically involves generating random numbers and displaying them on the seven-segment display. Random variables are variables whose values are determined by chance or probability.

### 3.1 Overview

The Flip Flops take the input and based on that outputs are generated. The generated outputs are random and the numbers shown are from 1 to 15. The randomness is predictable because this system is deterministic. a deterministic system is a system in which no randomness is involved in the development of future states of the system.

The order of the output in this case follows : 1, 3, 7, 15, 14, 13, 10, 5, 11, 6, 12, 9, 2, 4, 8

## 4 Block Diagram

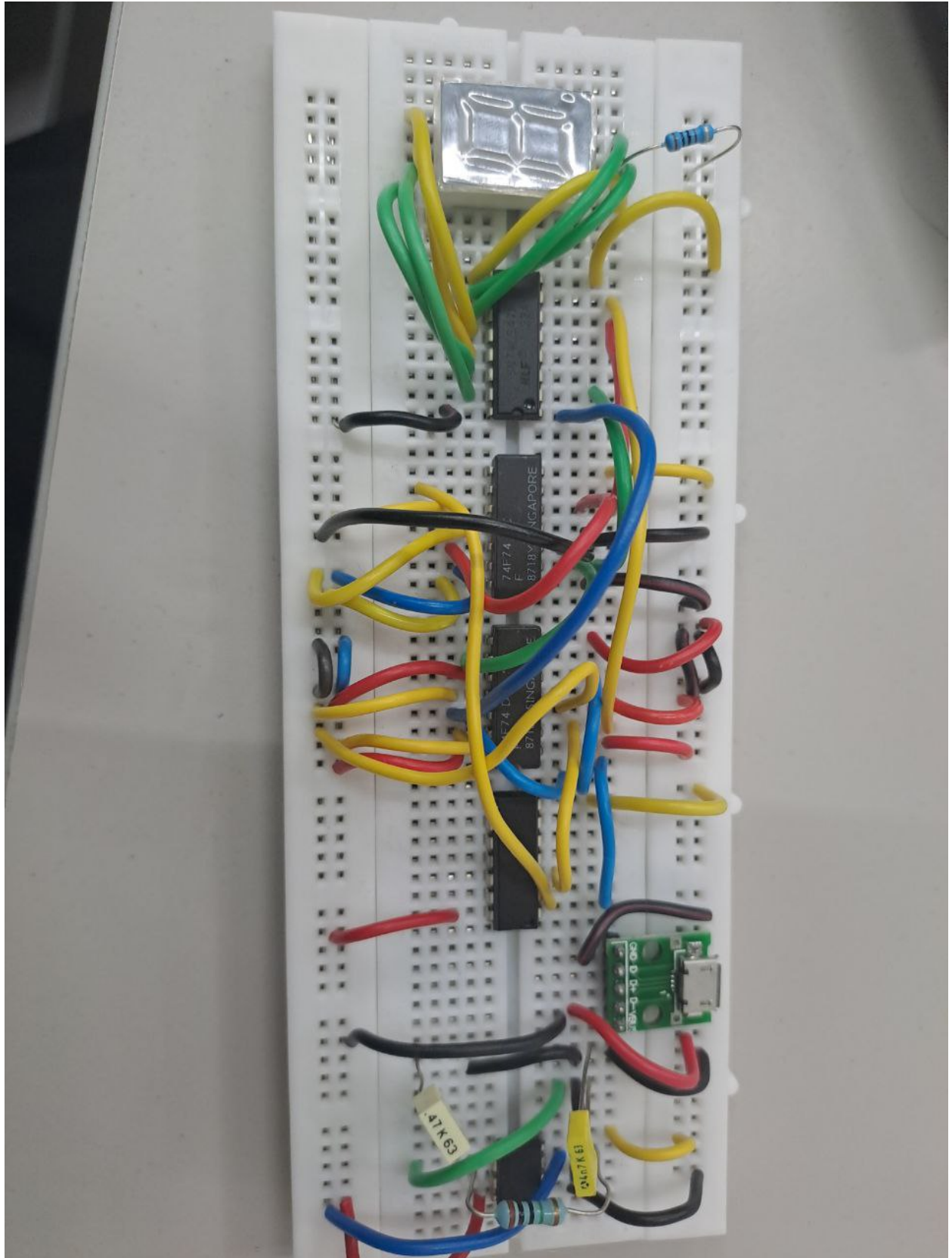


Figure 1: Circuit Board

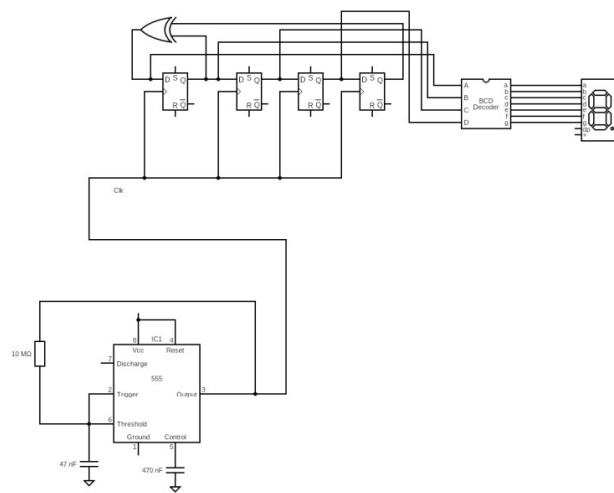


Figure 2: Block Diagram