Probability Assignment

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(CS22BTECH11003)

INTRODUCTION

Randomness is a fundamental component of many computer science applications, including simulations, cryptography, games, and statistical analysis. In this assignment, we delve into the implementation of a random number generator using a shift registers

COMPONENTS USED

Component	Value	Quantity
Breadboard		1
Seven Segment Diplay	Common Anode	1
Decoder	7447	1
Flip Flop	7474	2
X-OR Gate	7486	1
555 IC		1
Resistor	1 KΩ	1
Capacitor	100 nF	1
Capacitor	10 nF	1
Jumper Wires		

PROCEDURE

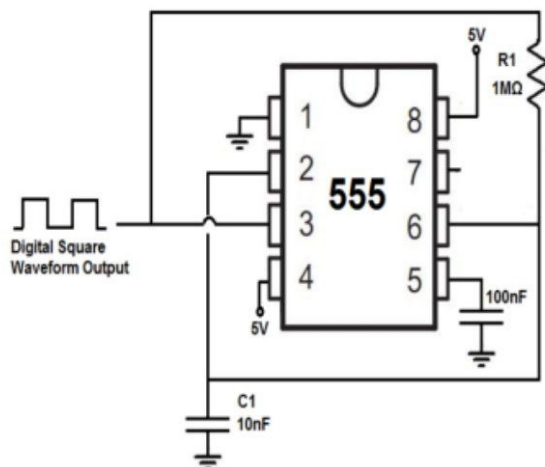1) We connected the 555 timer circuit based on the following figure:

Fig. 1. Connection in 555 timer circuit

2) Then, we connected the 555 timer's clock output to the D-flip flops' clock signal.
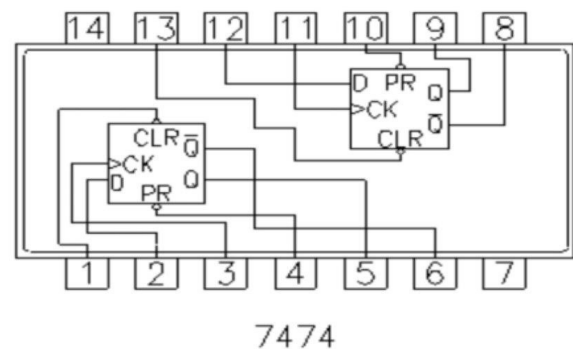3) Now we construct the shift register circuit that use four D-flip flops(7474 IC's).

Fig. 2. Connection in 7474 IC

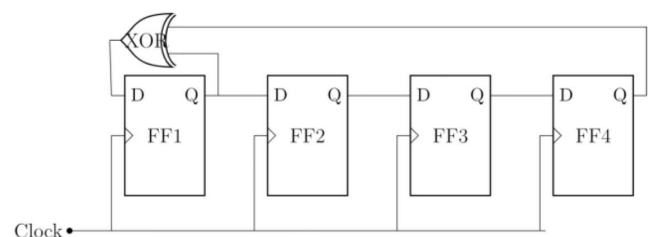4) Then, consistent with the diagram, we join the XOR gate (7486 IC).

Fig. 3. Connection in XOR gate

5) Following that, we joined the decoder (7447 IC), connecting its A, B, C, and D to Q_0, Q_1, Q_2, and Q_3, respectively, shown later in the diagram.
6) Then we connected The seven segmented display and connected it with the decoder (7447 IC) according to the table 5 and the figure 7
7) Before connecting the power supply, we linked all of the independent components.

Fig. 4. Connection in Decoder gate

7447	$\bar{a}$	$\bar{b}$	$\bar{c}$	$\bar{d}$	$\bar{e}$	$\bar{f}$	$\bar{g}$
Display	a	b	c	d	e	f	g

Fig. 5. Connection of seven segmented display with decoder

OUTPUT

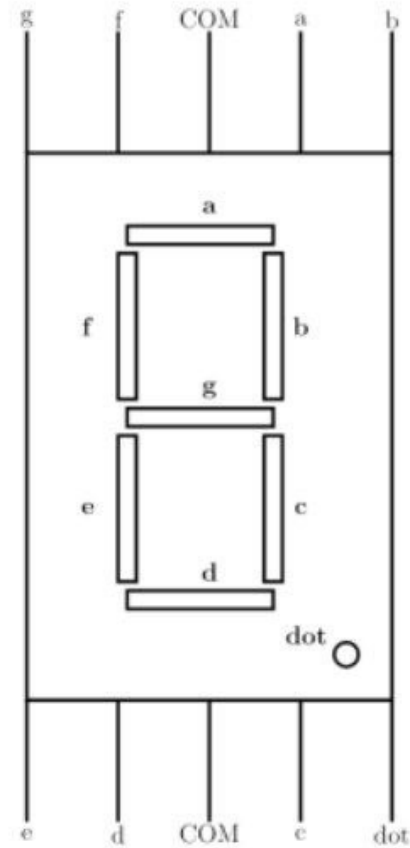The seven segment display showed random numbers being generated continuously as the output.
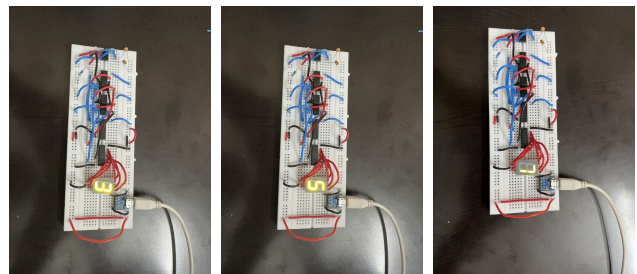

Fig. 6. Seven segmented display

Fig. 7. Output