Pseudo Sequence Noise Generator on Bread Board

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Abstract: A pseudo-random sequence noise generator, such as a Linear Feedback Shift Register (LFSR), is commonly used to generate pseudo-random sequences.In PN-Sequence generation also use same concept LFSR.

1 Implementation

A pseudo sequence noise (PN) generator can also be implemented using logic gates.Uses shift registers and exclusive OR (XOR) gates.

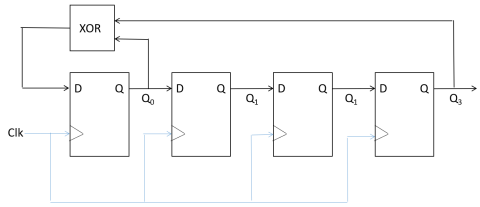

Fig. 0: Circuit Diagram

By the Fig0 can observe that for four bit psedu noise sequence generator requires four registers and one XOR.

Let us see how the random numbers are generating.

Q0	Q1	Q2	Q3	D0=XOR(Q3,Q0,)
0	1	0	1	1
1	0	1	0	1
1	1	0	1	0
0	1	1	0	0
0	0	1	1	1
1	0	0	1	0
0	1	0	0	0
0	0	1	0	0
0	0	0	1	1

Fig. 0: Truth Table

Based on the seed(intial value after reset) it generates a new sequence of numbers.All the all zero state is not allowed. For example if seed is 0101.The circuit will generate the following sequence in the truth table above.

2 Applications

1.PN Sequence generation which used as noise in Digital Dommunication.
2.Random numbers generation to allocate resources in Computer Organization

3 ICs Required for Hardware Implementation

a.555 Timer for clock generation
b.7486 for XOR operatioin
c.Two 7474 for four flip flops
d.7447 for BCD to 7 segment display decoder
e.seven segment display
f.Two 100nF capacitors
g.16MZ resistor