Code Converters

- The BINARY to GRAY CODE CONVERTER is a digital circuit that is used to convert the binary input into the corresponding equivalent gray code at its output.
- The circuit is a simple digital circuit which employs the use of Ex-OR gate IC for its operation. The output of the circuit (Gray code)finds various practical applications

WHAT IS A BINARY CODE ?

A binary code represents text or computer processor instructions using the binary number system's two binary digits, 0 and 1. The binary code assigns a bit string to each symbol or instruction.

Binary-to-Gray code conversion

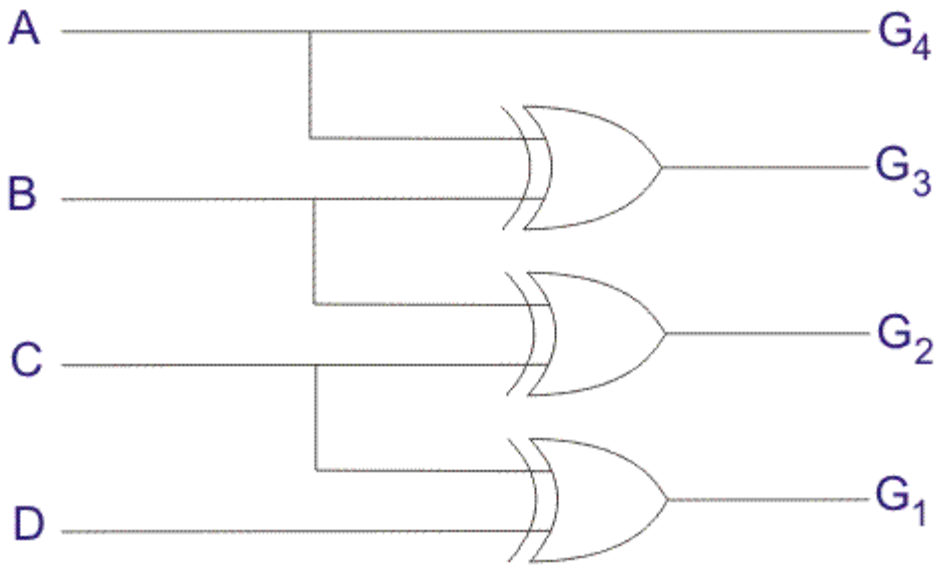
i. The MSB in the Gray code is the same as corresponding MSB in the binary number.

ii. Going from left to right, add each adjacent pair of binary code bits to get the next Gray code bit. Discard carries.

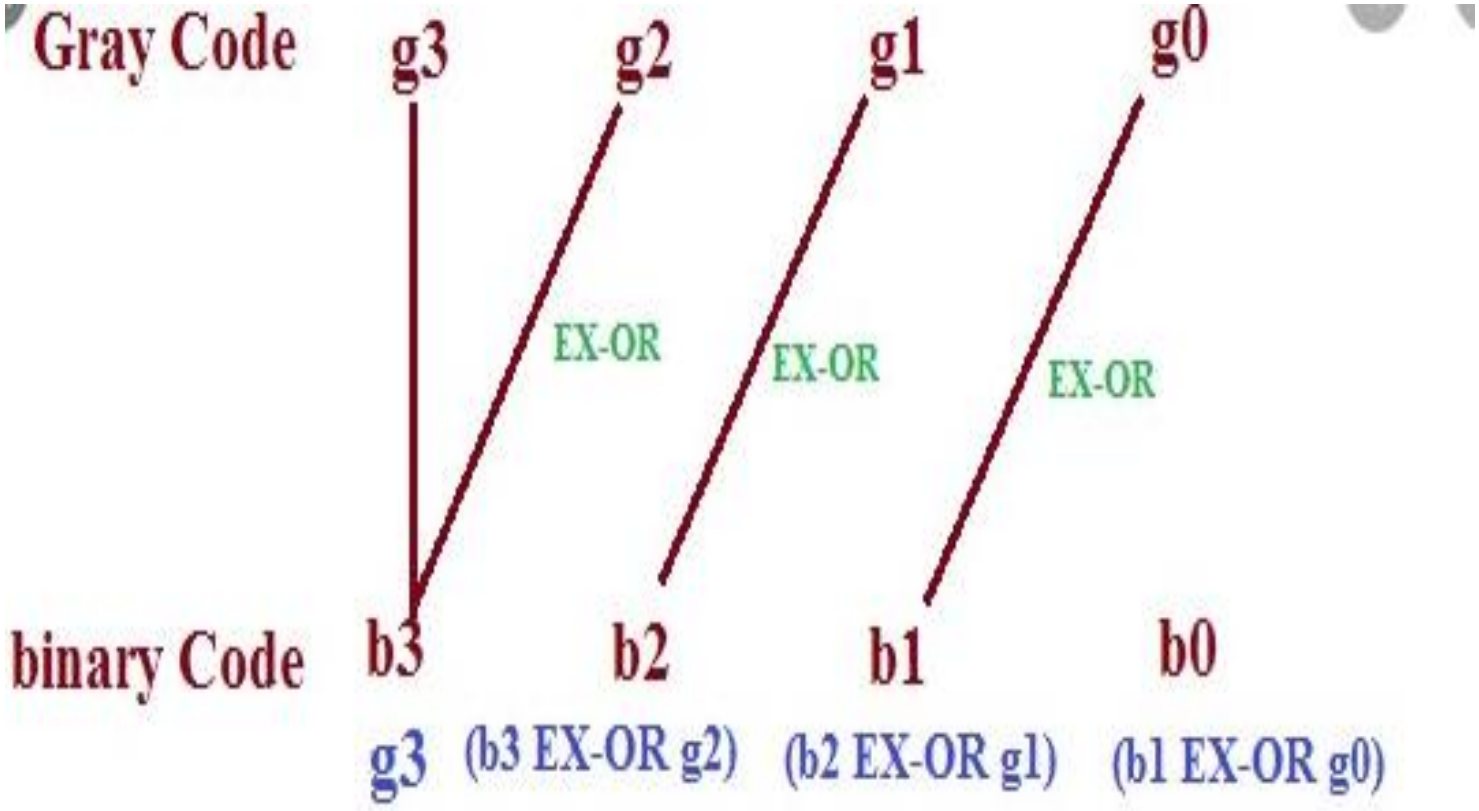
eg: convert 10110_2 to Gray code

Decimal	Binary	Gray Code
0	0000	0000
1	0001	0001
2	0010	0011
3	0011	0010
4	0100	0110
5	0101	0111
6	0110	0101
7	0111	0100

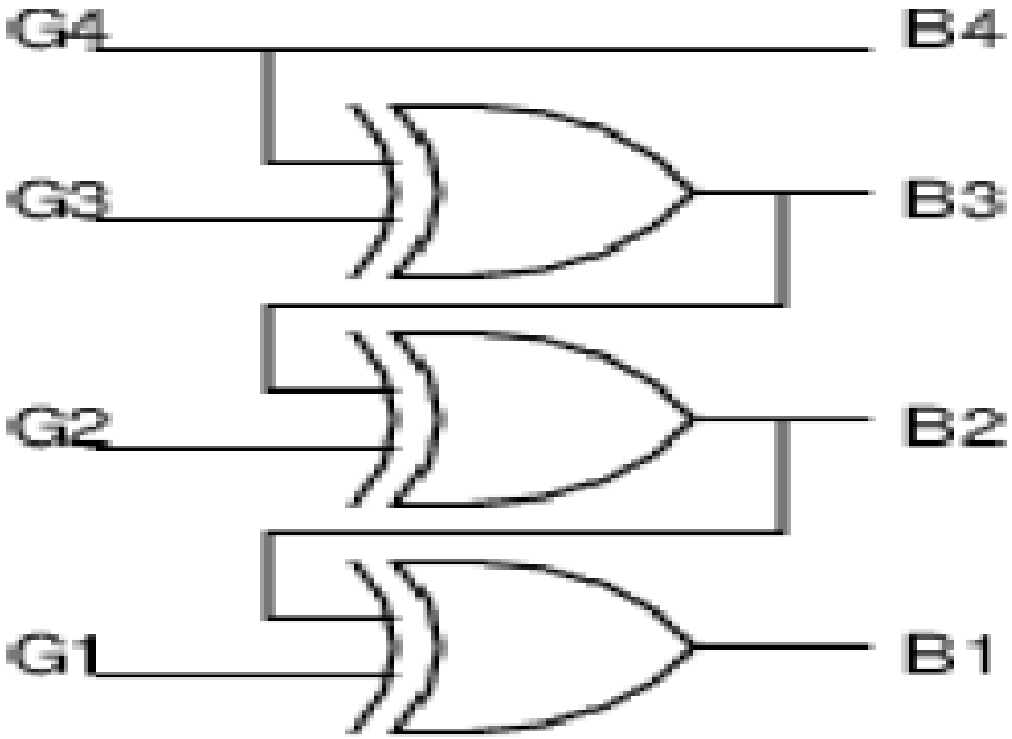
Decimal	Binary	Gray Code
8	1000	1100
9	1001	1101
10	1010	1111
11	1011	1110
12	1100	1010
13	1101	1011
14	1110	1001
15	1111	1000



Logic Circuit for Binary to Gray Code Converter


Gray Code
g3
g2
g1
g0
EX-OR
EX-OR
EX-OR
binary Code
b3
b2
b1
b0
g3
(b3 EX-OR g2)
(b2 EX-OR g1)
(b1 EX-OR g0)

Gray Code				Binary			
g_3	g_2	g_1	g_0	b_3	b_2	b_1	b_0
0	0	0	0	0	0	0	0
0	0	0	1	0	0	0	1
0	0	1	0	0	0	1	1
0	0	1	1	0	0	1	0
0	1	0	0	0	1	1	1
0	1	0	1	0	1	1	0
0	1	1	0	0	1	0	0
0	1	1	1	0	1	0	1
1	0	0	0	1	1	1	1
1	0	0	1	1	1	1	0
1	0	1	0	1	1	0	0
1	0	1	1	1	1	0	1
1	1	0	0	1	0	0	0
1	1	0	1	1	0	0	1
1	1	1	0	1	0	1	1
1	1	1	1	1	0	1	0



g. 7. Gray to binary conversion.

THANK YOU