

Exp No. 4 Binary to Gray and Gray to Binary Code Convesions

Binary-Gray Code

1-A Gray code is an encoding of numbers so that adjacent numbers have a single digit differing by 1.

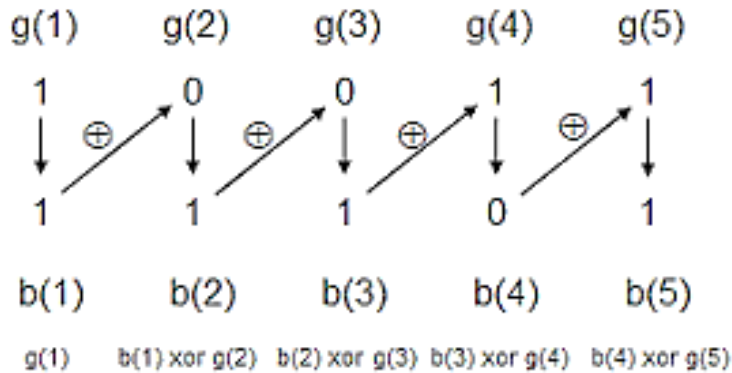
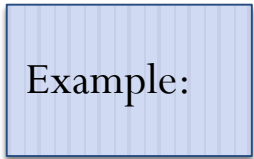
2-The term Gray code is often used to refer to a "reflected" code, or more specifically still, the binary reflected Gray code.

3-Gray code is unweighted code suited for analog – to – digital converters and are widely used to facilitate error correction in digital communications such as digital terrestrial television and some cable TV systems.

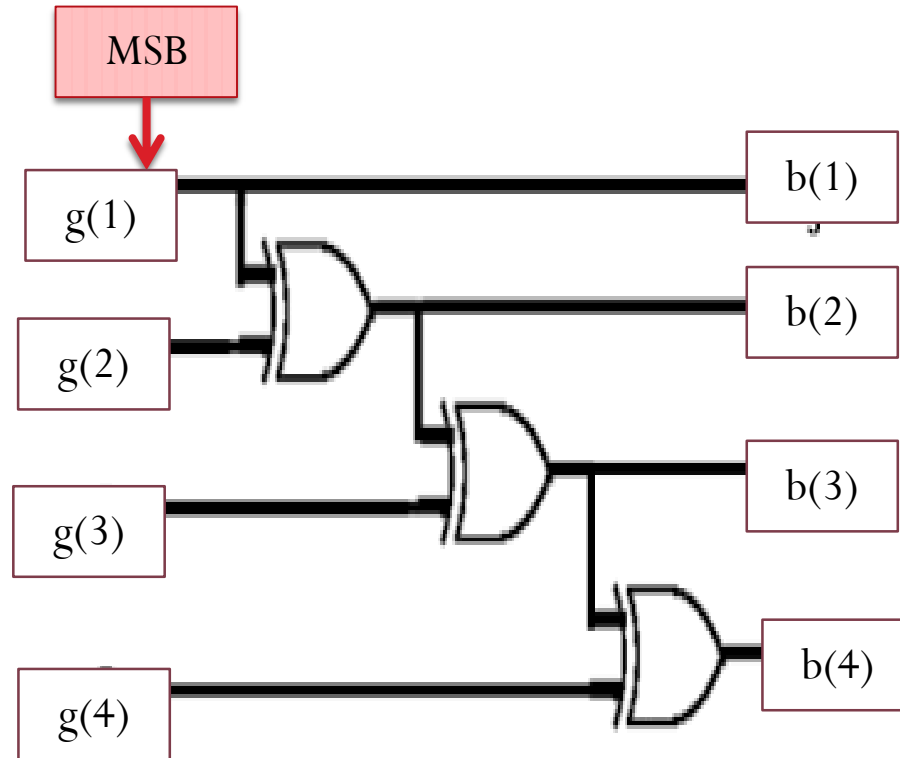
Decimal numbers	Binary code	Gray code
0	0000	0000
1	0001	0001
2	0010	0011
3	0011	0010
4	0100	0110
5	0101	0111
6	0110	0101
7	0111	0100
8	1000	1100
9	1001	1101
10	1010	1111
11	1011	1110
12	1100	1010
13	1101	1011
14	1110	1001
15	1111	1000

Gray-to- Binary Conversion

Example:

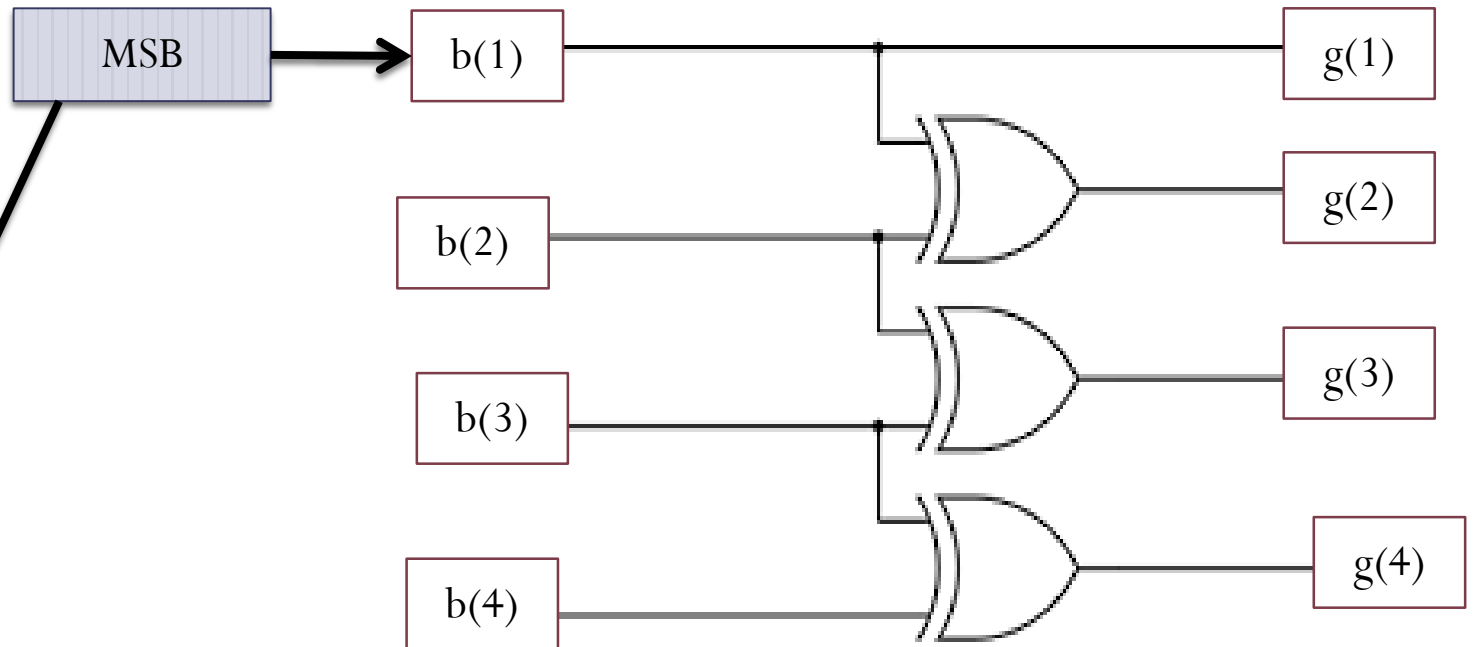


gray
binary



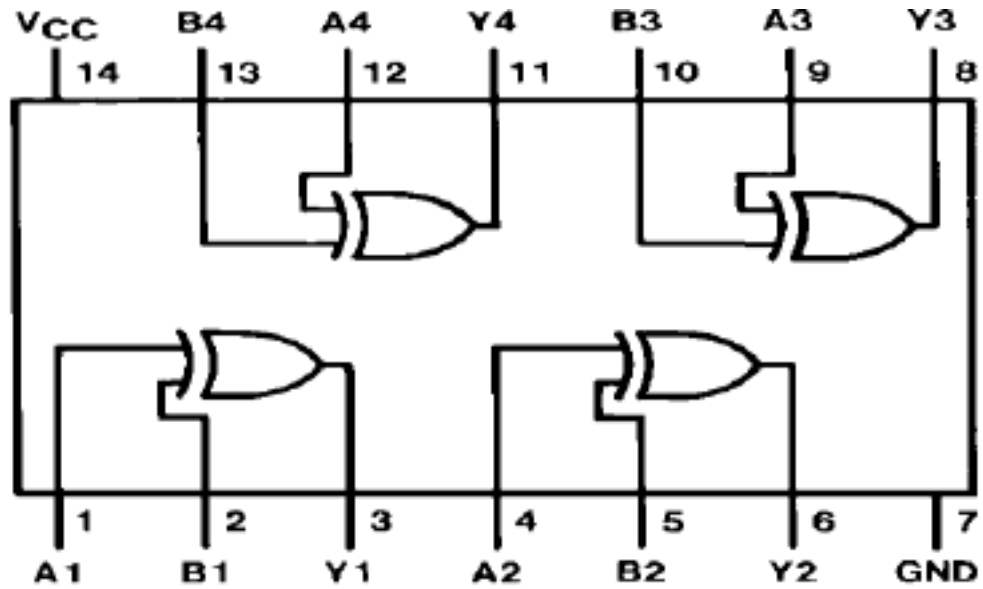
Logic circuit of Gray to Binary conversion

Binary-to- Gray Conversion



Logic circuit of Binary to Gray conversion

b(1)	b(2)	b(3)	b(4)	b(5)	
1	1	1	0	1	binary
	\oplus	\oplus	\oplus	\oplus	
1	0	0	1	1	gray
g(1)	g(2)	g(3)	g(4)	g(5)	
b(1)	b(1) xor b(2)	b(2) xor b(3)	b(3) xor b(4)	b(4) xor b(5)	



Pin diagram of 7486 XOR