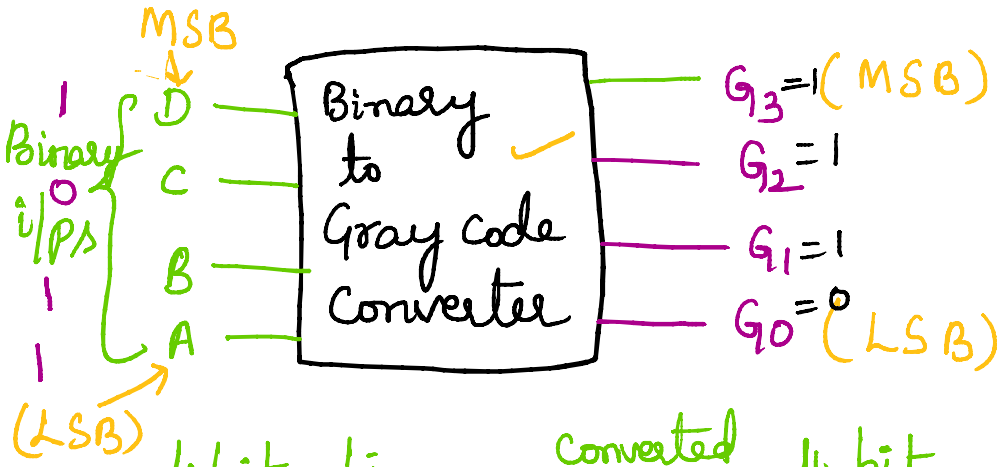
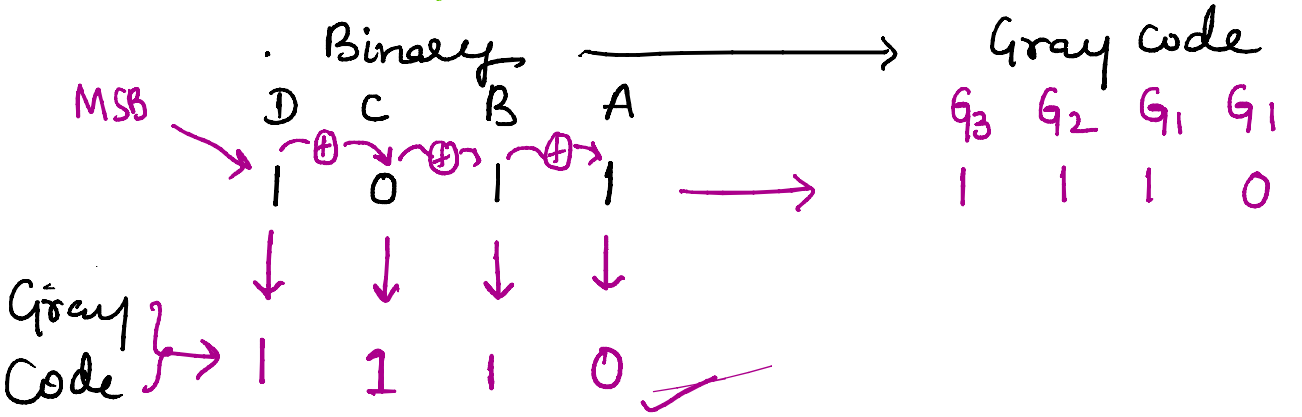
Binary to Gray code Converter

Wednesday, October 14, 2020 10:00 AM



4 bit binary → Converted 4 bit Gray code



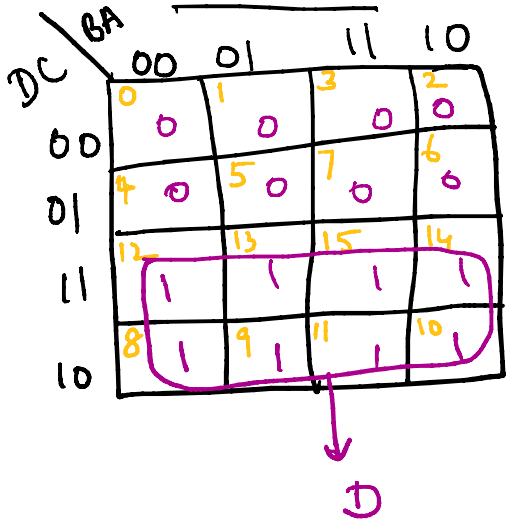
Binary to Gray code Converter - Truth table

Decimal	Binary Code D C B A	Gray Code G_3 G_2 G_1 G_0
0	0 0 0 0	0 0 0 0
1	0 0 0 1	0 0 0 1
2	0 0 1 0	0 0 1 1
3	0 0 1 1	0 0 1 0
4	0 1 0 0	0 1 1 0
5	0 1 0 1	0 1 1 1
6	0 1 1 0	0 1 0 1
7	0 1 1 1	0 1 0 0
8	1 0 0 0	1 1 0 0
9	1 0 0 1	1 1 0 1
10	1 0 1 0	1 1 1 1
11	1 0 1 1	1 1 1 0
12	1 1 0 0	1 1 1 0
13	1 1 0 1	1 0 1 0
14	1 1 1 0	1 0 1 1
15	1 1 1 1	1 0 0 1
		1 0 0 0

Gray Code

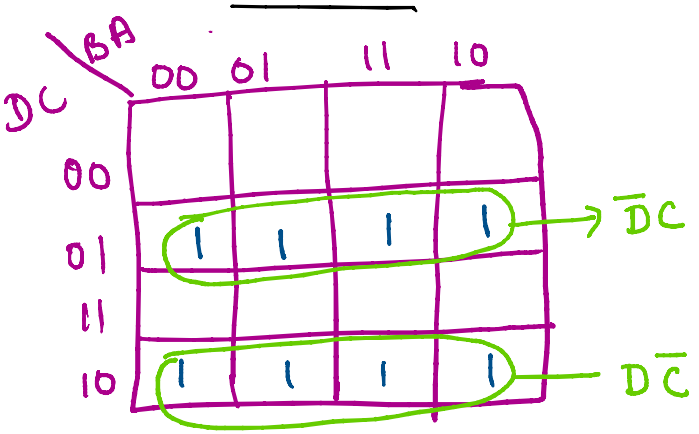
0 → 0 0 0 0 →
1 0 0 0 1 →
2 0 0 1 1 → 2
3 0 0 1 0
4 0 1 1 0
5 0 1 1 1
6 0 1 0 1
7 0 1 0 0
8 1 1 0 0
9 1 1 0 1
10 1 1 1 1
11 1 1 1 0
12 1 0 1 0
13 1 0 1 1
14 1 0 0 1
15 1 0 0 0

for G_3



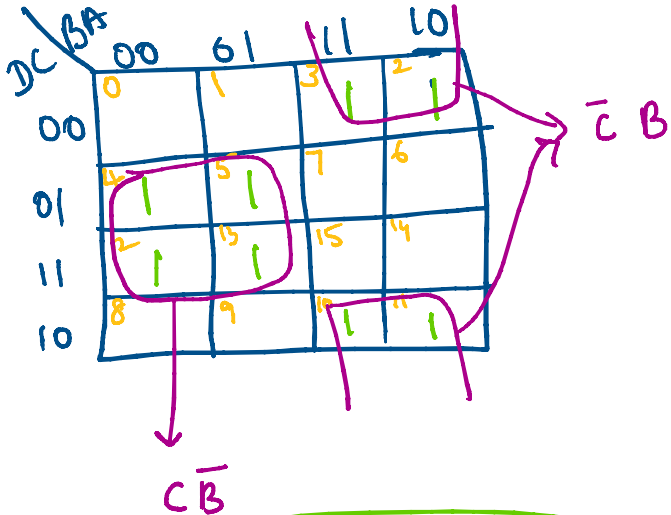
$G_3 = D$ ✓

for G_2



$G_2 = \bar{D}C + D\bar{C} \Rightarrow D \oplus C$

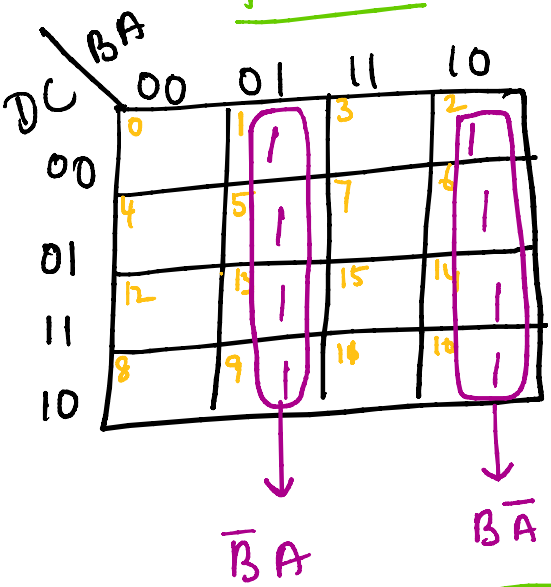
for G_1



$G_1 = \bar{B}C + B\bar{C} \Rightarrow B \oplus C$

$G_3 = D$

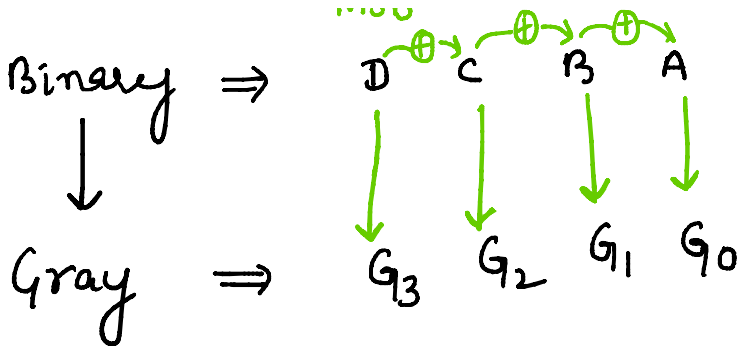
for G_0



$G_0 = A\bar{B} + \bar{A}B \Rightarrow A \oplus B$

$G_2 = C \oplus D$ ✓

Binary $\Rightarrow$ MSB D ⊕ C ⊕ B ⊕ A



Logic diagram for binary to Gray code converter