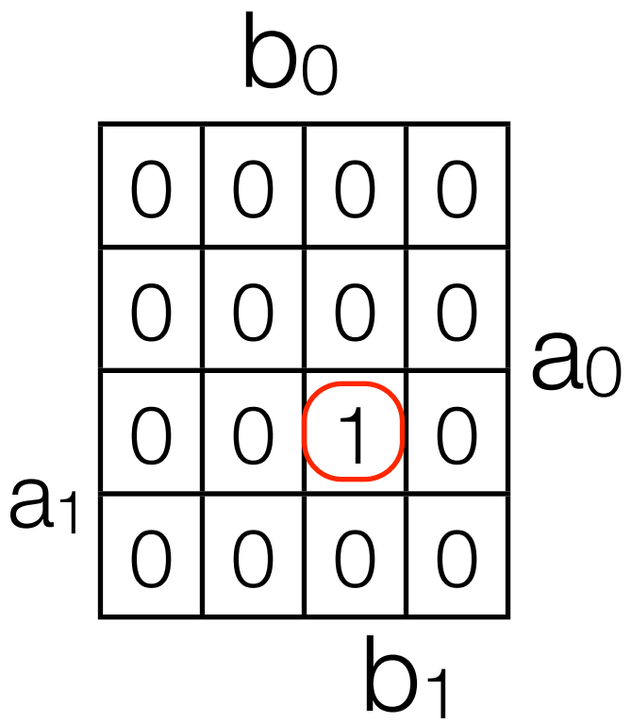
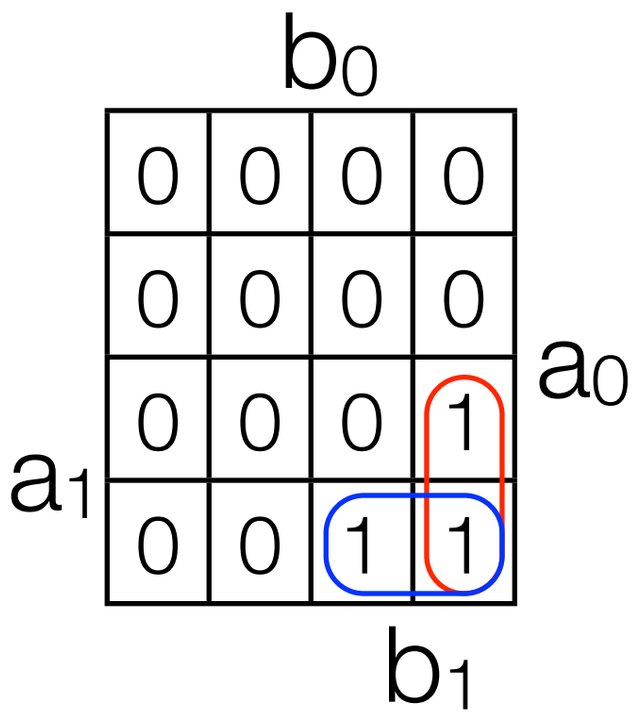
Design example : 2-bit multiplier (SOLUTION)

a1	a0	b1	b0	z3	z2	z1	z0
0	0	0	0				
0	0	0	1				
0	0	1	0				
0	0	1	1				
0	1	0	0				
0	1	0	1				1
0	1	1	0			1	
0	1	1	1			1	1
1	0	0	0				
1	0	0	1			1	
1	0	1	0		1		
1	0	1	1		1	1	
1	1	0	0				
1	1	0	1			1	1
1	1	1	0		1	1	
1	1	1	1	1			1



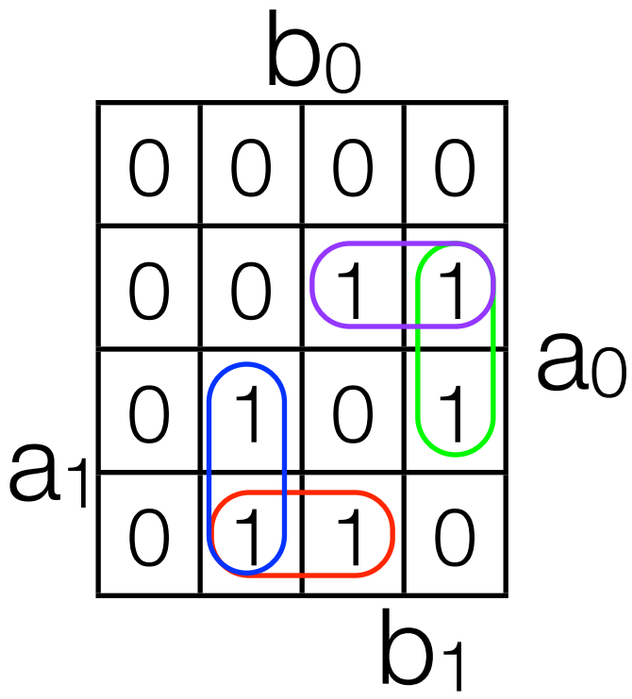
$z_3 = a_1 a_0 b_1 b_0$



$z_2 = a_1 \overline{a_0} b_1 + a_1 b_1 \overline{b_0}$

Design example : 2-bit multiplier (SOLUTION)

a1	a0	b1	b0	z3	z2	z1	z0
0	0	0	0				
0	0	0	1				
0	0	1	0				
0	0	1	1				
0	1	0	0				
0	1	0	1				1
0	1	1	0			1	
0	1	1	1			1	1
1	0	0	0				
1	0	0	1			1	
1	0	1	0		1		
1	0	1	1		1	1	
1	1	0	0				
1	1	0	1			1	1
1	1	1	0		1	1	
1	1	1	1	1			1



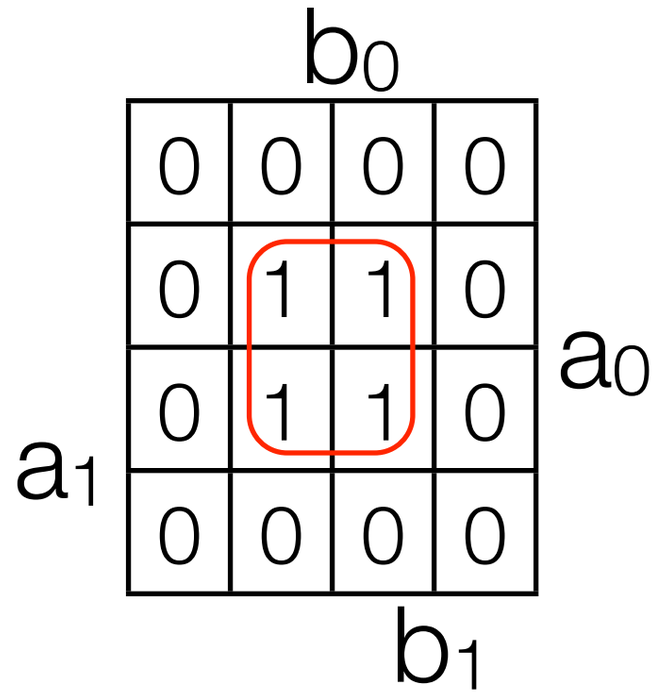
$z_1 =$

$a_1\overline{a_0}b_0 +$

$a_1\overline{b_1}b_0 +$

$\overline{a_1}a_0b_1 +$

$a_0b_1\overline{b_0}$



$z_0 = a_0b_0$