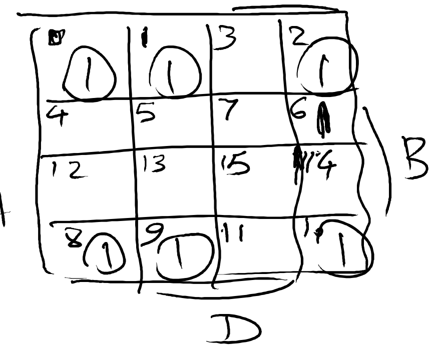
4-variable

Sunday, April 5, 2020 6:45 PM

$F = A'B'C' + B'CD' + A'BCD' + AB'C'$

m_6



$A'B'C' = A'B'C'(D'+D)$

$= A'B'C'D' + A'B'C'D$

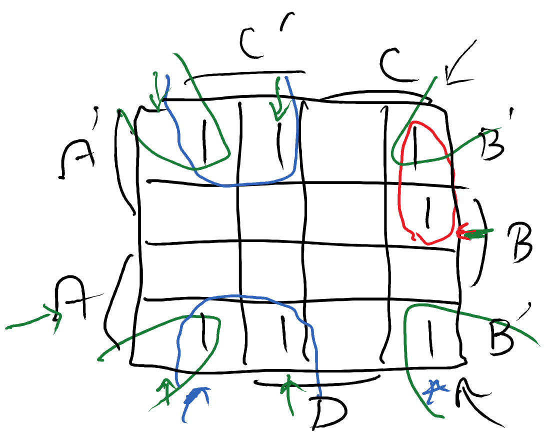
$m_0 + m_1$

$B'CD' = B'CD'(A'+A)$

$= \underset{0\,0\,1\,0}{A'B'CD'} + \underset{1\,0\,1\,0}{AB'CD'}$

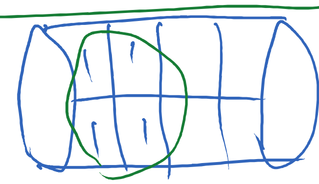
$= m_2 + m_{10}$

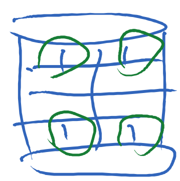
$AB'C' = AB'C'(D'+D) = \underset{1\,0\,0\,0}{AB'C'D'} + \underset{1\,0\,0\,1}{AB'C'D}$



$F = \Sigma(0, 1, 2, 10, 8, 9, 6)$

$F = A'B'C' + B'CD' + A'BCD' + AB'C'$





$F = B'C' + B'D' + A'CD'$

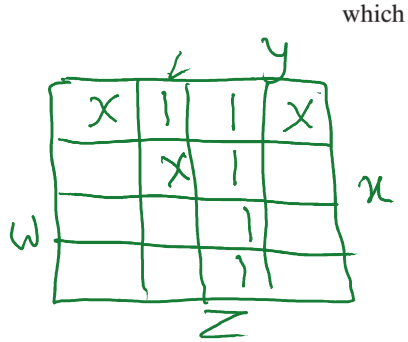
Don't Care حالات بی اهمیت

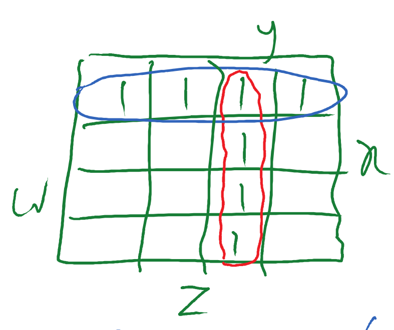
Simplify the Boolean function

$$F(w, x, y, z) = \Sigma(1, 3, 7, 11, 15)$$

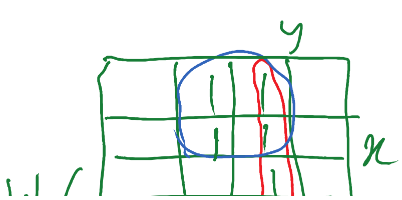
which has the don't-care conditions

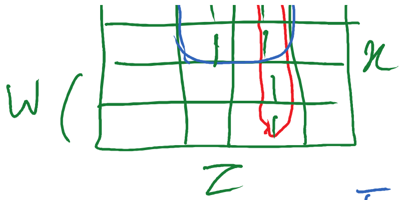
$$d(w, x, y, z) = \Sigma(0, 2, 5)$$





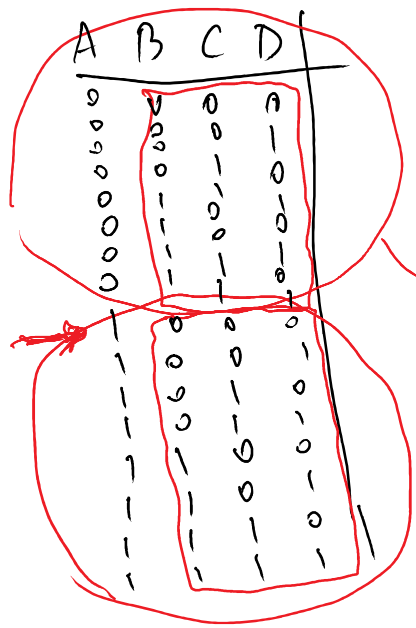
$F = yz + w'x'$





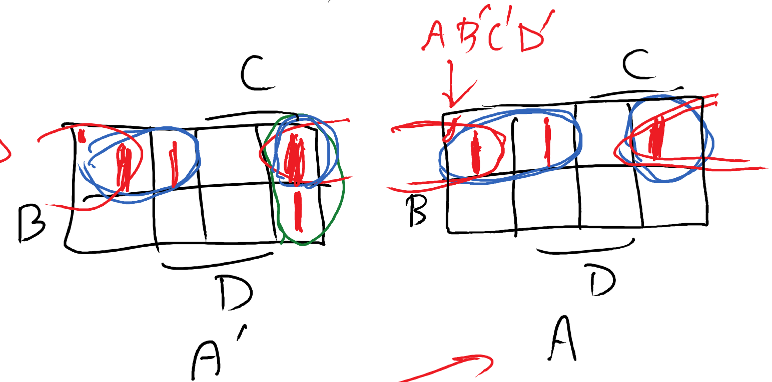
$F = yz + wx$

$F = yz + w'z$



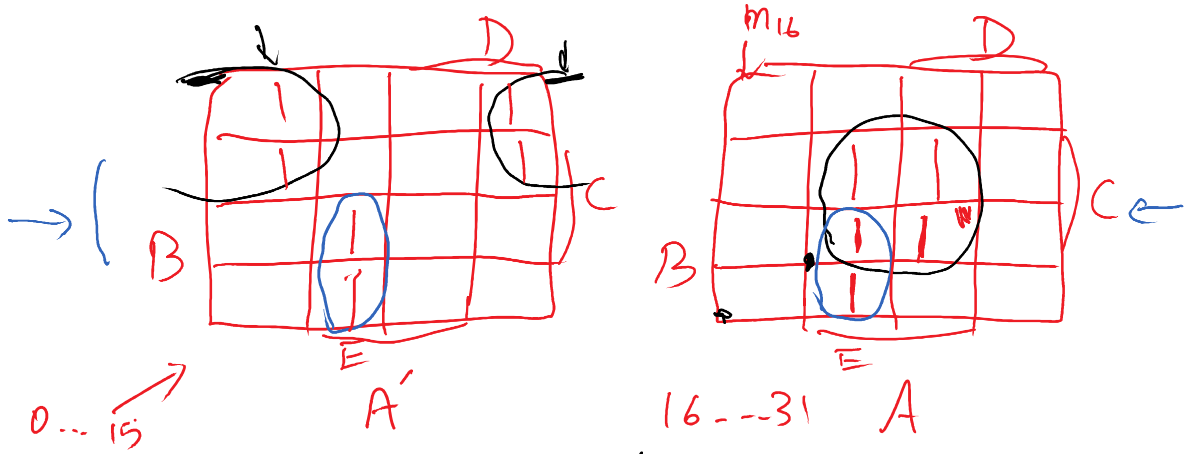
$F = A'B'C' + B'CD' + A'BCD' + AB'C'$

$F(A,B,C,D) = \Sigma(0,1,2,6,8,9,10)$



$A'CD' + B'C' + B'D'$

$F(A,B,C,D,E) = \Sigma(0,2,4,6,9,13,21,23,25,29,31)$



$F = BD'E + A'B'E' + ACE$

	A	B	C	F
m_0	0	0	0	0
m_1	0	0	1	1
m_2	0	1	0	1
m_3	0	1	1	0
m_4	1	0	0	1

$F = A \oplus B \oplus C$

$\Sigma(1,2,4,7)$ odd

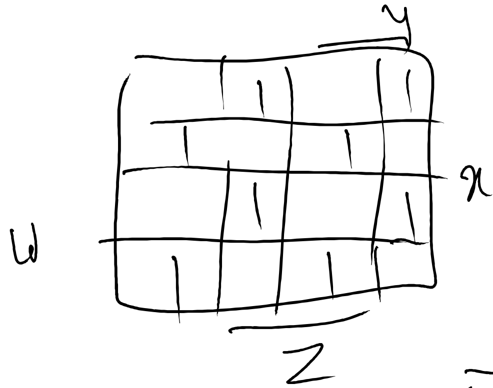
$F = (A \oplus B \oplus C)'$

m_3	0	1	1	0
m_4	1	0	0	1
m_5	1	0	1	0
m_6	1	1	0	0
m_7	1	1	1	1

$$F = (A \oplus B \oplus C)'$$

$$\Sigma(0, 3, 5, 6)$$

even

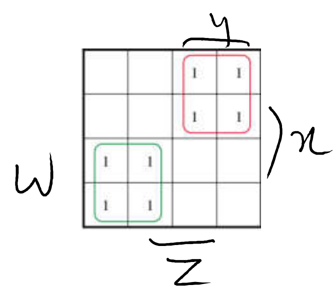


$1101 = 13$

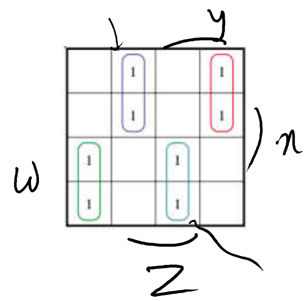
$1011 = 11$

$1110 = 14$

$$F = w \oplus x \oplus y \oplus z$$



$$F = wy' + w'y$$
$$= w \oplus y$$



$$F = wy'z' + wyz + w'y'z + w'yz'$$

$$= w(\underbrace{y'z' + yz}_{A'}) + w'(\underbrace{y'z + yz'}_{A})$$

$A = y'z + yz'$
$= y \oplus z$

$$= wA' + w'A = w \oplus A = w \oplus y \oplus z$$