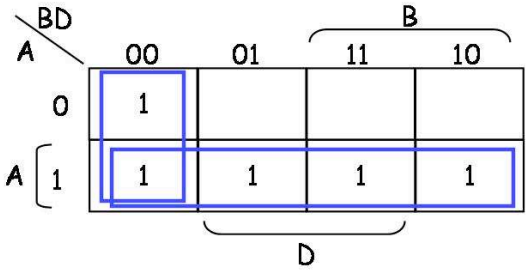
INF2270– Ukeoppgaver 6 - Fasit

Her kommer det en del oppgaver som skal gi dere god trening innen det å forenkle uttrykk. For de av dere som ønsker å trene på forenkling av uttrykk ved regning kan løse oppgavene først for hånd, deretter bruke K-map til å se om dere har gjort det riktig. Lykke til ☺

Oppgave 1: Forenkle følgende uttrykk

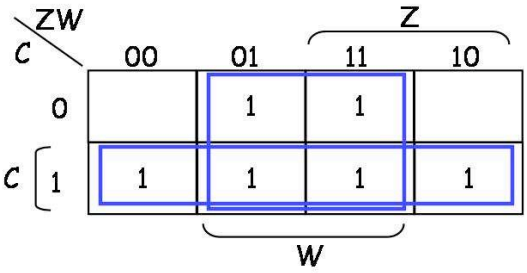
a) BA + D'B' + DB'A

F = D´B´+ A



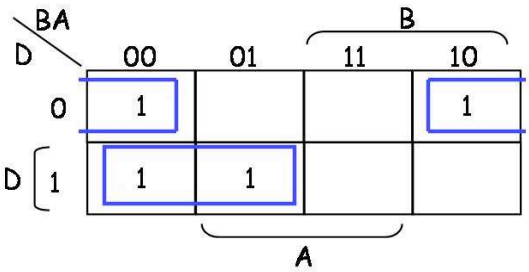
b) CZ + Z'W + CW' + C'ZW

F = C + W



c) B'A' + D'A' + DB'A

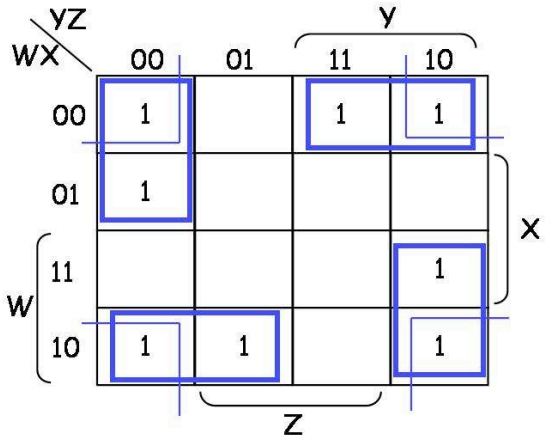
F = D´A´+ DB



d

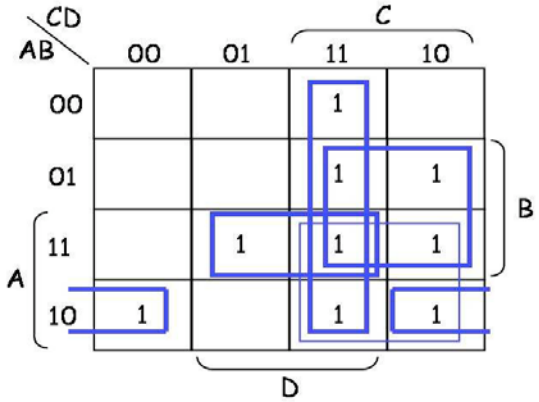
Oppgave 2: Forenkle følgende uttrykk gitt av mintermer

a) F(W,X,Y,Z) = Sum m(0, 2, 3, 4, 8, 9, 10, 14)



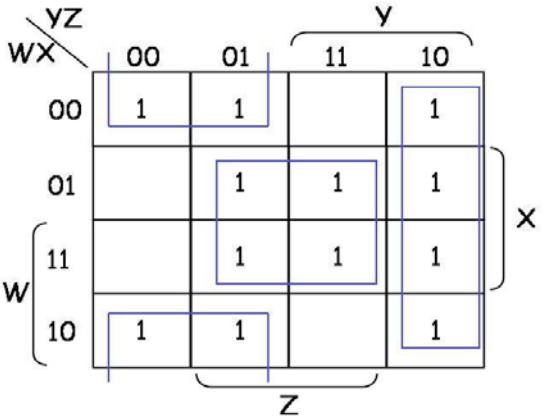
$$F = \bar{W}\bar{Y}\bar{Z} + \bar{W}\bar{X}Y + W\bar{X}\bar{Y} + WY\bar{Z}$$

b) F(A,B,C,D) = Sum m(3, 6, 7, 8, 10, 11, 13, 14, 15)



$$F = CD + BC + ABD + A\bar{B}\bar{D}$$

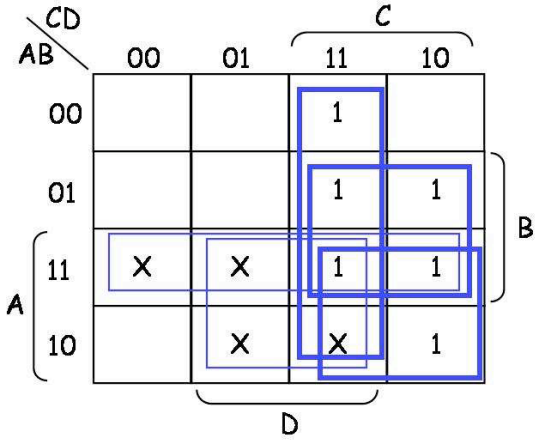
c) F(W,X,Y,Z) = Sum m(0, 1, 2, 5, 6, 7, 8, 9, 10, 13, 14, 15)



$$F = \bar{X}\bar{Y} + XZ + Y\bar{Z}.$$

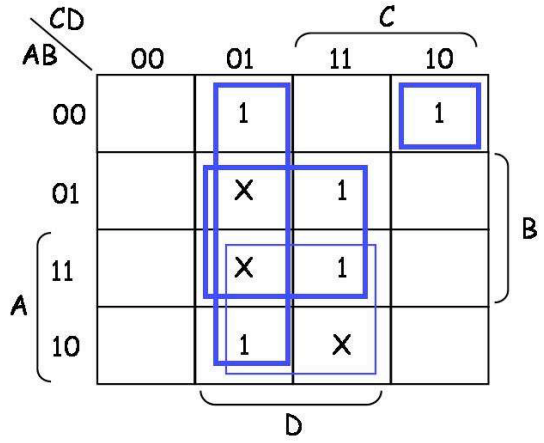
Oppgave 3: Forenkle følgende uttrykk med don´t care

a): F(A,B,C,D) = Sum m(3, 6, 7, 10, 14, 15), don't-care conditions: d(A,B,C,D) = Sum m(9, 11, 12, 13)



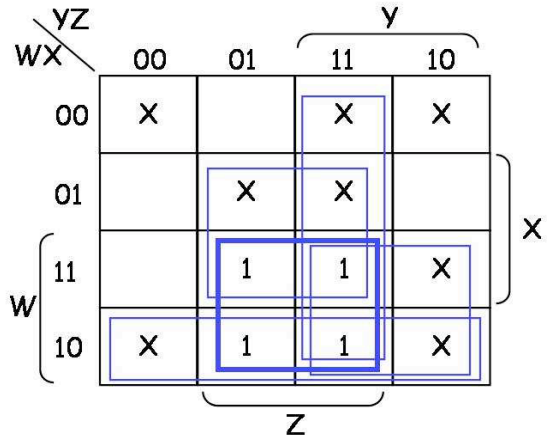
$$F = CD + BC + AC$$

b): F(A,B,C,D) = Sum m(1, 2, 7, 9, 15), don't-care conditions: d(A,B,C,D) = Sum m(5, 11, 13)



$$F = \bar{C}D + BD + \bar{A}\bar{B}C\bar{D}$$

c): F(W,X,Y,Z) = Sum m(9, 11, 13, 15), don't-care conditions: d(W,X,Y,Z) = Sum m(0, 2, 3, 5, 7, 8, 10, 14)



$$F = WZ$$

Oppgave 4: Gitt følgende funksjoner

$F(A, B, C, D) = \Sigma(0, 4, 5, 7, 8, 12, 13, 15)$

AB \ CD	00	01	11	10
00	1	0	0	0
01	1	1	1	0
11	1	1	1	0
10	1	0	0	0

$G(A, B, C, D) = \Pi(0, 1, 7, 8, 9, 10, 11, 12, 15)$

AB \ CD	00	01	11	10
00	0	0	1	1
01	1	1	0	1
11	0	1	0	1
10	0	0	0	0

(a) Simplified F•G

AB \ CD	00	01	11	10
00	0	0	0	0
01	1	1	0	0
11	0	1	0	0
10	0	0	0	0

F•G = A'BC' + BC'D

(b) Simplified F+G

AB \ CD	00	01	11	10
00	1	0	1	1
01	1	1	1	1
11	1	1	1	1
10	1	0	0	0

F+G = B + C'D' + A'C