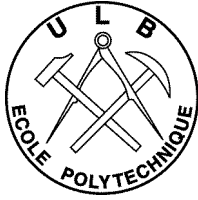


Séance 6

Méthode de Quine - Mc Cluskey : recherche des implicants premiers

1. Trouver les implicants premiers par la méthode de Quine - Mc Cluskey :
 - a.) $f(A,B,C,D)=\Sigma m(2,4,8,9,10,11,13,15)$
 - b.) $f(A,B,C,D)=\Sigma m(0,4,5,8,12,13)$
 - c.) $f(A,B,C,D)=\Sigma m(0,1,2,7,8,9,10)$
 - d.) $f(A,B,C,D)=\Sigma m(0,2,5,6,7,8,10,12,13,14,15)$
 - e.) $f(A,B,C,D)=\Sigma m(2,3,4,10,12,13) + \Sigma d(11,14,15)$
 - f.) $f(A,B,C,D)=\Sigma m(0,2,4,5,6,9,10) + \Sigma d(7,11,12,13,14,15)$
 - g.) $f(A,B,C,D,E)=\Sigma m(0,1,2,4,11,15,17,20,21,31) + \Sigma d(5,6,16,18,22,27)$
 - h.) $f(A,B,C,D,E)=\Sigma m(0,13,18,26,28,29) + \Sigma d(2,8,10,12,16,24)$
 - i.) $f(A,B,C,D,E)=\Sigma m(0,2,5,7,8,9,10,11,13,23,26,27,29) + \Sigma d(3,12,15,18,19,21,22,31)$
 - j.) $f(A,B,C,D,E,F) = \Sigma m(16,28,53,60,63)$
 - k.) $f(A,B,C,D,E,F) = \Sigma m(1,2,3,15,17,18,19,26,32,48,63)$
 - l.) $f(A,B,C,D,E,F) = \Sigma m(1,2,3,15,16,17,18,19,26,28,29,30,32,48,63)$
 - m.) $f(A,B,C,D,E,F) = \Sigma m(0,7,11,13,16,23,28,31) + \Sigma d(1,2,17,19,25)$
 - n.) $f(A,B,C,D,E,F) = \Sigma m(1,2,3,15,17,18,19,26,32,48,63) + \Sigma d(16,28,29,30)$
 - o.) $f(A,B,C,D,E,F) = \Sigma m(0,1,2,5,14,16,18,24,26,30) + \Sigma d(3,13,28)$
 - p.) $f(A,B,C,D,E,F) = \Sigma m(7,8,9,13,17,41,45,57) + \Sigma d(1,15,44,56)$
 - q.) $f(A,B,C,D,E,F,G) = \Sigma m(28,39,52,65,102,103,120)$
2. Trouver les fonctions simplifiées :
 - a.) $f(a,b,c,d) = \Sigma m(0,2,4,5,10,11,13,15) + \Sigma d(6,8)$
 - b.) $f(a,b,c,d) = \Sigma m(1,5,6,9,11,12,14,15) + \Sigma d(2,3,4,13)$
 - c.) $f(a,b,c,d,e) = \Sigma m(3,7,14,15,19,22,23,27,31) + \Sigma d(0,6,11,24,25,28,29,30)$



a) $f(A,B,C,D)=\Sigma m(2,4,8,9,10,11,13,15)$

$AD, AB', B'CD', A'BC'D'$

b) $f(A,B,C,D)=\Sigma m(0,4,5,8,12,13)$

$C'D', BC'$

c) $f(A,B,C,D)=\Sigma m(0,1,2,7,8,9,10)$

$A'BCD, B'C', B'D'$

d) $f(A,B,C,D)=\Sigma m(0,2,5,6,7,8,10,12,13,14,15)$

$AB, BC, B'D', BD$

e) $f(A,B,C,D)=\Sigma m(2,3,4,10,12,13) + \Sigma d(11,14,15)$

$B'C, BC'D', AC, AB$

f) $f(A,B,C,D)=\Sigma m(0,2,4,5,6,9,10) + \Sigma d(7,11,12,13,14,15)$

$A'D', CD', B, AD, AC$

g) $f(A,B,C,D,E)=\Sigma m(0,1,2,4,11,15,17,20,21,31) + \Sigma d(5,6,16,18,22,27)$

$B'D', BDE, B'E'$

h) $f(A,B,C,D,E)=\Sigma m(0,13,18,26,28,29) + \Sigma d(2,8,10,12,16,24)$

$C'E', BD'E', BCD'$

i) $f(A,B,C,D,E)=\Sigma m(0,2,5,7,8,9,10,11,13,23,26,27,29) + \Sigma d(3,12,15,18,19,21,22,31)$

j) $f(A,B,C,D,E,F) = \Sigma m(16,28,53,60,63)$

$ABCDEF, BCDE'F', ABC'DE'F, A'BC'D'E'F'$

k) $f(A,B,C,D,E,F) = \Sigma m(1,2,3,15,17,18,19,26,32,48,63)$

$ABCDEF, AC'D'E'F', A'BD'EF', A'B'CDEF, A'C'D'E', A'C'D'F$

l) $f(A,B,C,D,E,F) = \Sigma m(1,2,3,15,16,17,18,19,26,28,29,30,32,48,63)$

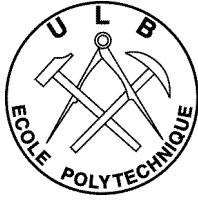
m) $f(A,B,C,D,E,F) = \Sigma m(0,7,11,13,16,23,28,31) + \Sigma d(1,2,17,19,25)$

n) $f(A,B,C,D,E,F) = \Sigma m(1,2,3,15,17,18,19,26,32,48,63) + \Sigma d(16,28,29,30)$

o) $f(A,B,C,D,E,F) = \Sigma m(0,1,2,5,14,16,18,24,26,30) + \Sigma d(3,13,28)$

p) $f(A,B,C,D,E,F) = \Sigma m(7,8,9,13,17,41,45,57) + \Sigma d(1,15,44,56)$

q) $f(A,B,C,D,E,F,G) = \Sigma m(28,39,52,65,102,103,120)$



Systèmes Logiques et Numériques

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ELEC 212 Circuits Logiques

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2. Trouver les fonctions simplifiées par la méthode Quine – McCluskey pour les exercices suivantes:

a.) $f(a,b,c,d) = \Sigma m(0,2,4,5,10,11,13,15) + \Sigma d(6,8)$

$$f = \overline{a}b\overline{c} + \overline{b}\overline{d} + a\overline{b}c + abd$$

b.) $f(a,b,c,d) = \Sigma m(1,5,6,9,11,12,14,15) + \Sigma d(2,3,4,13)$

$$f = \overline{c}d + b\overline{d} + ad$$

c.) $f(a,b,c,d,e) = \Sigma m(3,7,14,15,19,22,23,27,31) + \Sigma d(0,6,11,24,25,28,29,30)$

$$f = de + cd$$