המכללה האקדמית להנדסה בת"א המגמה להנדסת תוכנה וניהול

תשס"ו, סמסטר א' מרצה: יצחק נודלר

תרגיל בית מס' 3 – פתרון מערכות ספרתיות

<u>מקרא:</u>

משמעות	ם ל
NOT	4
OR	+
AND	*

שאלה מספר 1

Х.

$$X = A + (B*C+A*B)'$$

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

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

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

$$= (A + B' + C') * (1 + B')$$

$$= (A + B' + C') * 1$$

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

ב.

$$X = A*B + (A*B + A*C)'$$

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

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

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

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

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

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

ג.

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

= $A + B'*C' + C'$
= $A + C' * (B' + 1)$
= $A + C'$

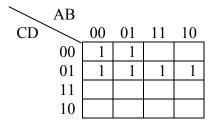
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.7
A + B' + (A*B + C)'
= A + B' + (A*B)' * C'
= A + (B' + (A*B)') * (B' + C')
= A + (B' + A' + B') * (B' + C')
= A + (1 + A') * (B' + C')
= A + B' + C'
                                                                                ٦.
(A + A*B*C + B*C)
= (A + B*C*(A+1))'
= (A + B*C)'
                                                                                ٦.
A + (A + (A*B))
= A + (A * (1+B))'
= A + A'
= 1
                                                                                .7
A + (A*D + C*D)' + C*D
= A + (A*B)'*(C*D)' + C*D
= A + (A*B)'*(C*D)' + (C*D)
= (A + (A*B)') * (A + (C*D)') + C*D
= A + A' + B') * (A + (C*D)') + C*D
= 1*(A + (C*D)') + C*D
= A + (C*D)' + C*D
= A + 1
= 1
                                                                      שאלה מספר 2
(A+B+C+D)' = A' * B' * C' * D'
                                                                                Х.
(A + B*C + A*C)' = (A + B*C)'
                                                                                ב.
(A + (B' * C*D) + D)' = (A + D)'
                                                                                ړ.
(A + B*C*D' + D)' = (A + B*C + D)'
                                                                                .7
(A + B*C + (A*C)')' = 0
                                                                                ٦.
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שאלה מספר 3

$$(A*B*C*D)' = A' + B' + C' + D'$$
 $(A*(B*C)'*D)' = A' + B*C + D'$
 $(A+(B*C)'+(A*B*C'))' = A' B*C$
 $(A+(B*C'*D)+C*D)' = A' + B' + C' + D'$
.7

שאלה מספר 4

$$Y = A'C'D' + AB'CD' + BC'D + ABCD'$$
.



$$Y = C'D + A'C'$$

$$Y = AB'C'D + A'B'C' + A'BC + A'C'D'$$
.

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

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

$$Y = AB'C' + A'B'C + A'B'D + AC'D' + BC'D' + B'CD'$$
.

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

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

שאלה מספר 5

$$F = \sum (1,2,4,11,15) = ACD + A'B'C'D + A'B'CD' + A'BC'D'$$

$$F = \sum (0,3,6,12,15) = A'B'C'D' + A'B'CD + A'BCD' + ABC'D' + ABCD$$

$$F = \sum (3,8,10,11,12) = AC'D' + AB'C + B'CD$$

$$F = \sum (10,12,14,15) = ACD' + ABC + ABD'$$

$$F = \sum (1,2,3,7) = A'CD + A'B'D + A'B'C$$

שאלה מספר 6

$$F = \sum (1,2,4,11,15) + \sum \phi(3,12) = ACD + BC'D' + A'B'(D+C)$$

$$F = \sum (0,6,15) + \sum \phi(3,10,11) = ACD + A'BCD' + A'B'C'D'$$

$$F = \sum (3,8,12) + \sum \phi(2,4) = AC'D' + A'B'C$$

$$F = \sum (1,10) + \sum \phi(2,5,6) = B'CD' + A'C'D$$

$$F = \sum (1,2,3,7) + \sum \phi(4) = A'CD + AB(C+D)$$