DIGITALNA LOGIKA

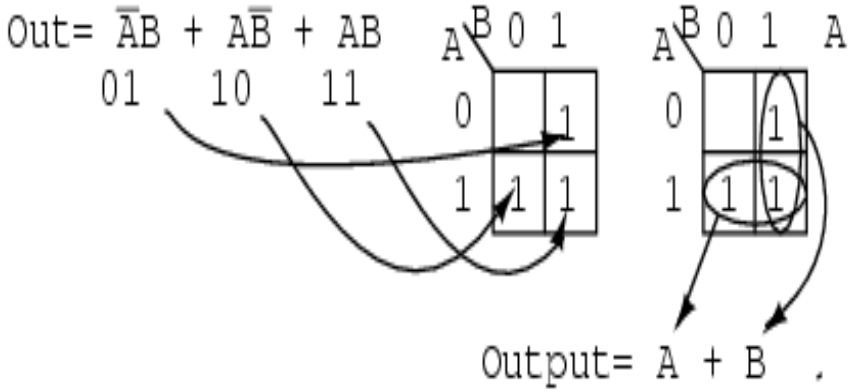
K-tablice

K-tablice

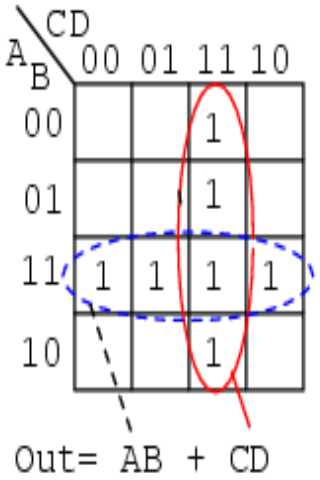
A	B	Output
0	0	α
0	1	β
1	0	χ
1	1	δ

A \ B	0	1
0	α	β
1	χ	δ

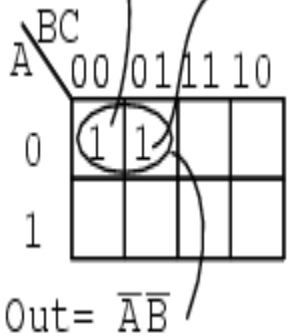
Out= $\bar{A}B + A\bar{B} + AB$



Out= $\bar{A}\bar{B}CD+\bar{A}B\bar{C}D+ABCD+A\bar{B}CD+AB\bar{C}\bar{D}+AB\bar{C}D+ABC\bar{D}$



Out= $\bar{A}\bar{B}\bar{C} + \bar{A}\bar{B}C$



f(A,B)

B \ A	0	1
0	0	2
1	1	3

f(A,B,C)

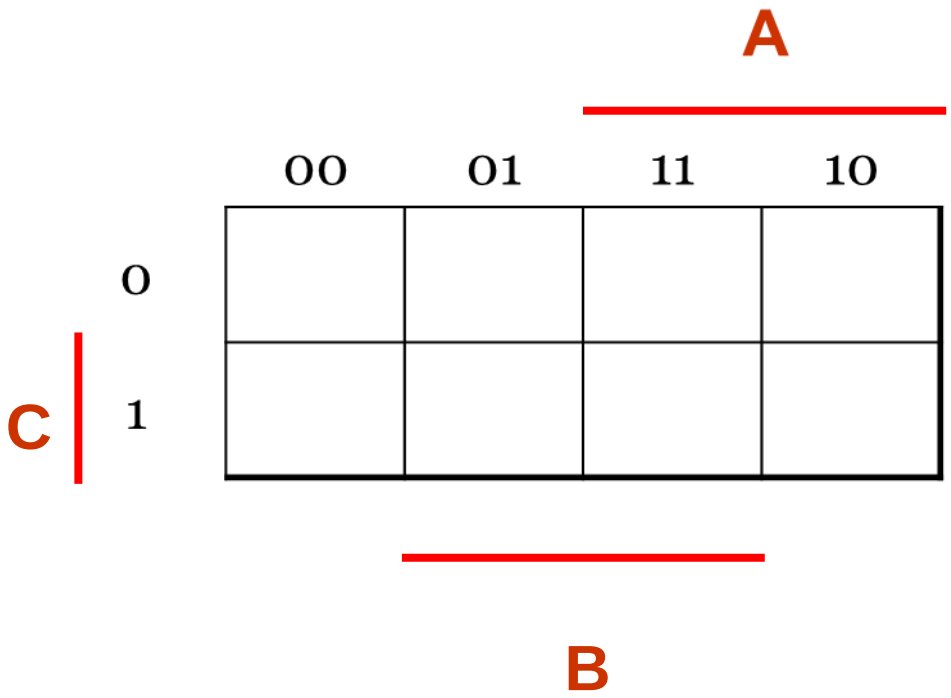
C \ AB	00	01	11	10
0	0	2	6	4
1	1	3	7	5

f(A,B,C,D)

CD \ AB	00	01	11	10
00	0	4	12	8
01	1	5	13	9
11	3	7	15	11
10	2	6	14	10

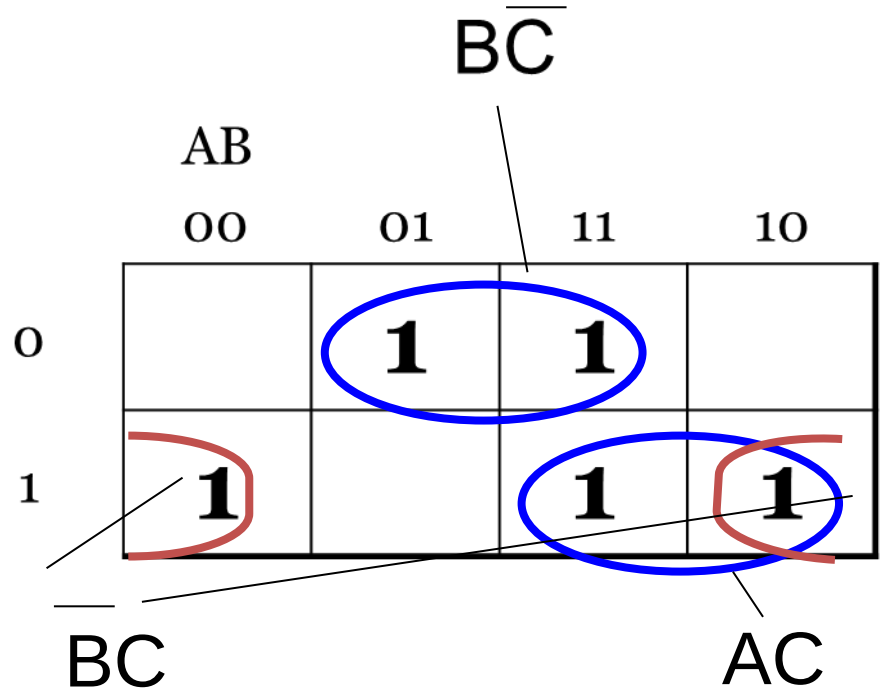
Pomoću K-tablice minimizirajte funkciju:

$f(A,B,C)=\Sigma(1, 2, 5, 6, 7)$



A	B	C	f
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

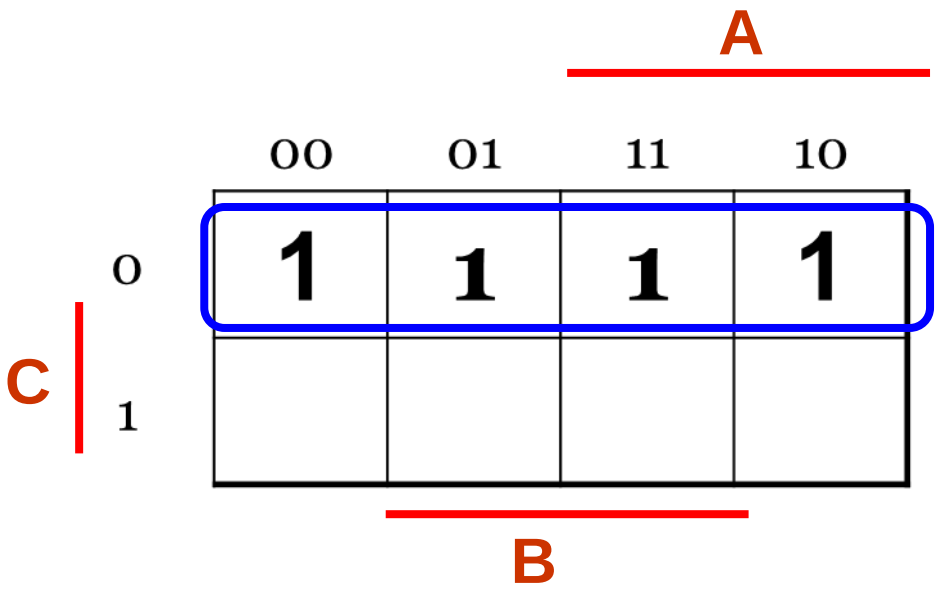
f(A,B,C)=Σ(1, 2, 5, 6, 7) - rješenje



A	B	C	f
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

$$f= \overline{B}C + B\overline{C} + AC$$

Pomoću K-tablice minimizirajte funkciju: f(A,B,C)=Σ(0, 2, 4, 6)

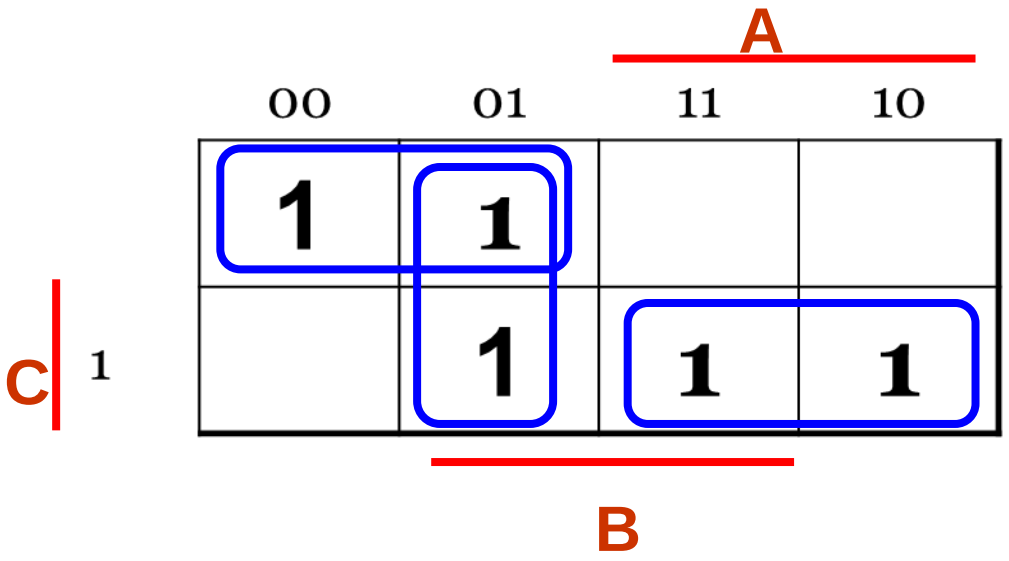


$f = \overline{C}$

A	B	C	f
0	0	0	**1**
0	0	1	0
0	1	0	**1**
0	1	1	0
1	0	0	**1**
1	0	1	0
1	1	0	**1**
1	1	1	0

Pomoću K-tablice minimizirajte funkciju:

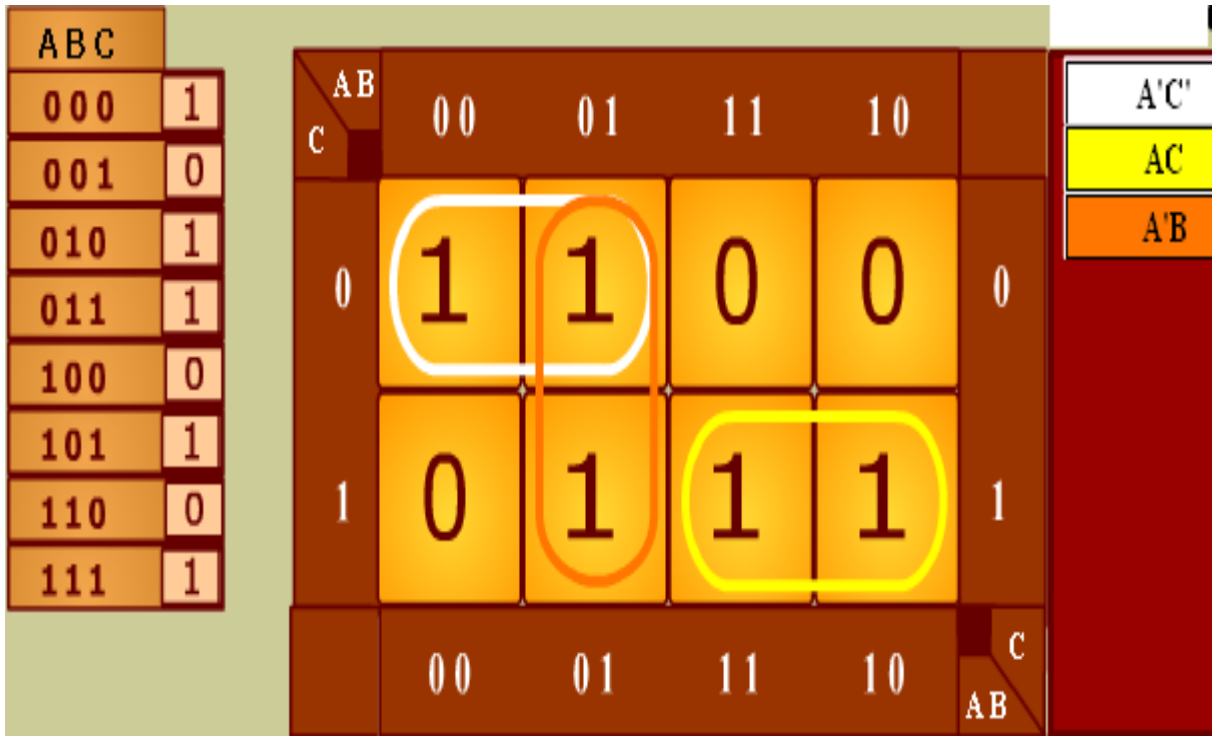
$f(A,B,C)=\sum(0, 2, 3, 5, 7)$



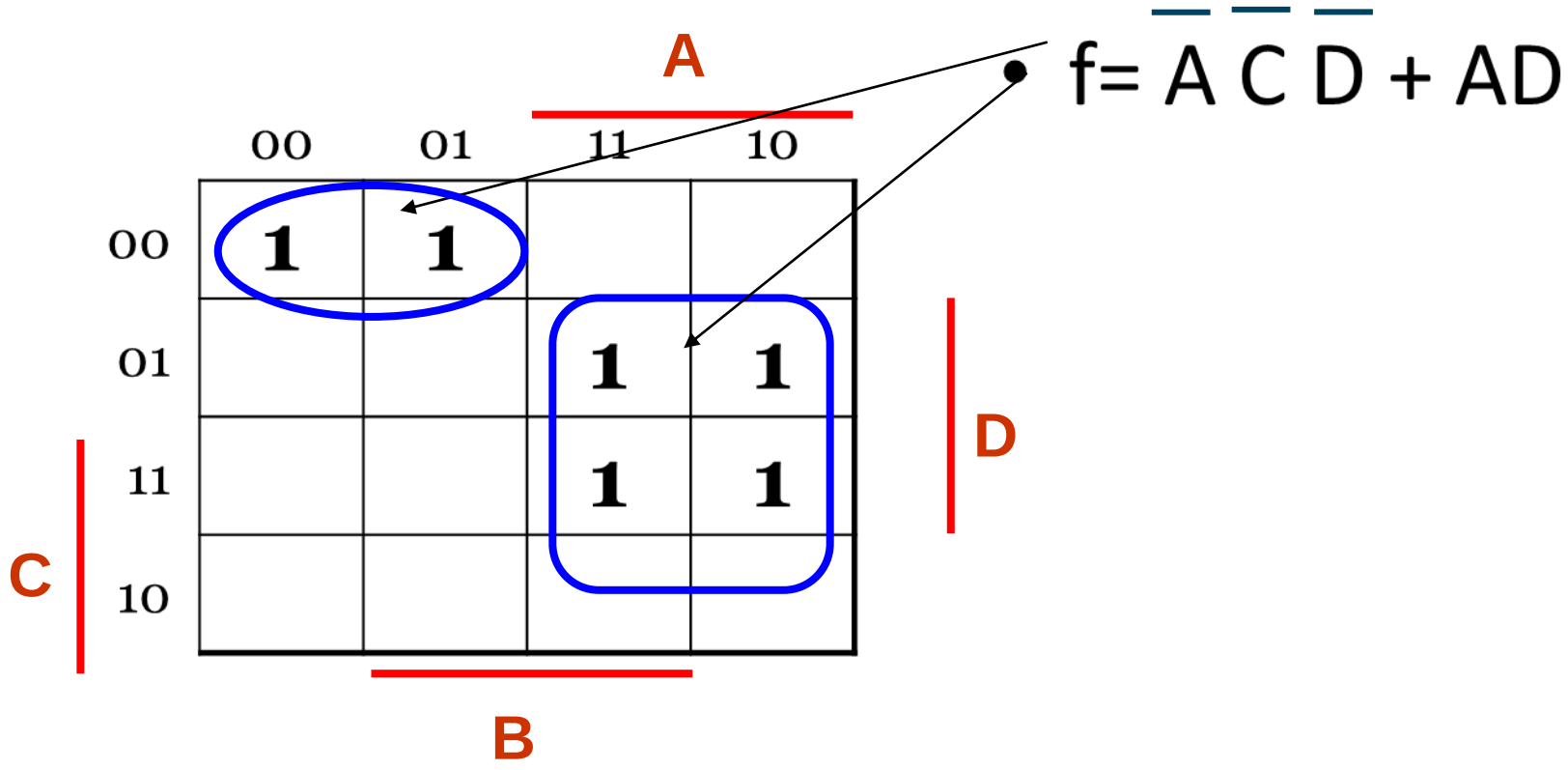
A	B	C	f
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	1

$$f= \bar{A}\bar{C} + AC + \bar{A}B$$

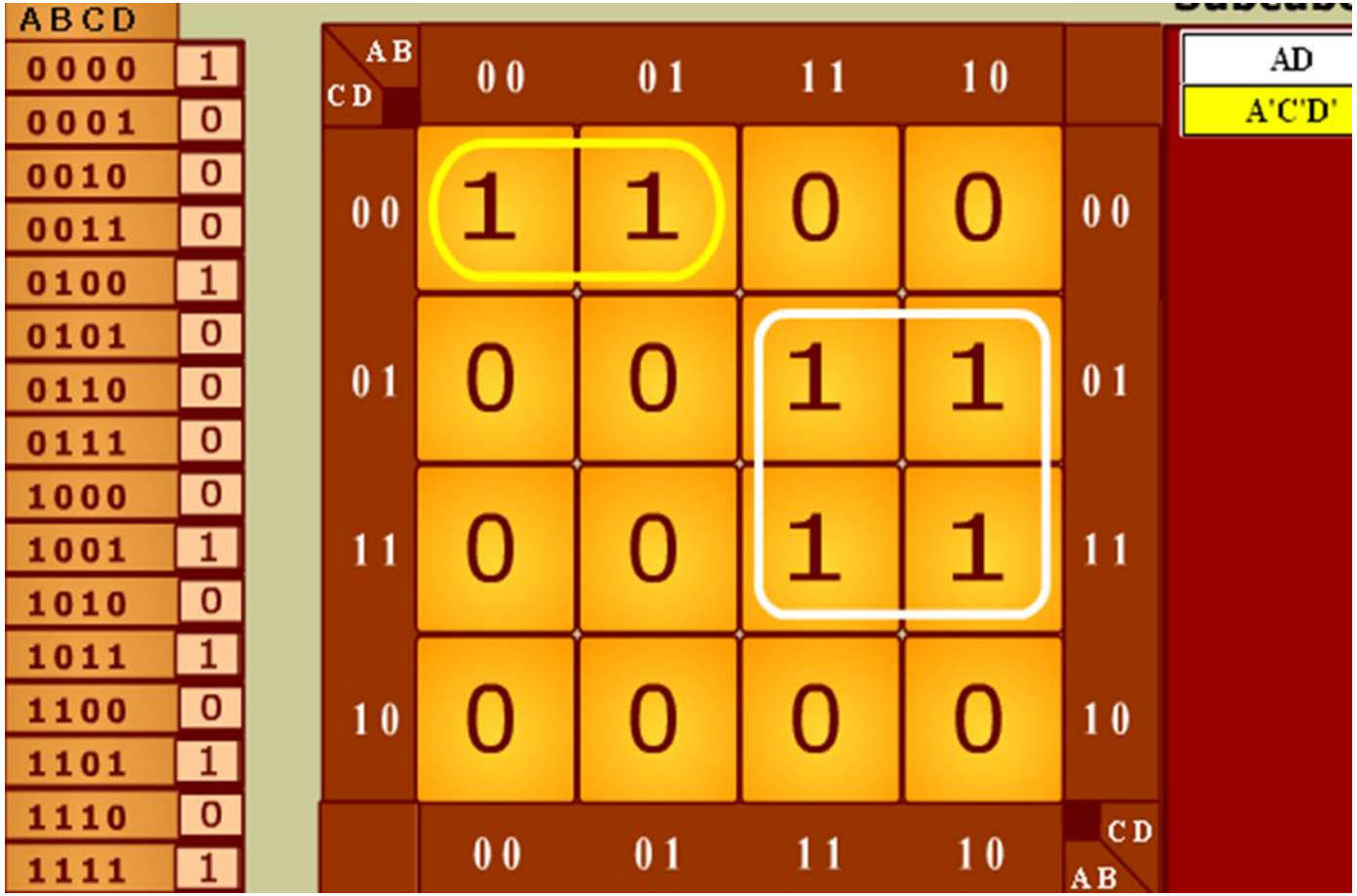
Rješenje pomoću simulatora



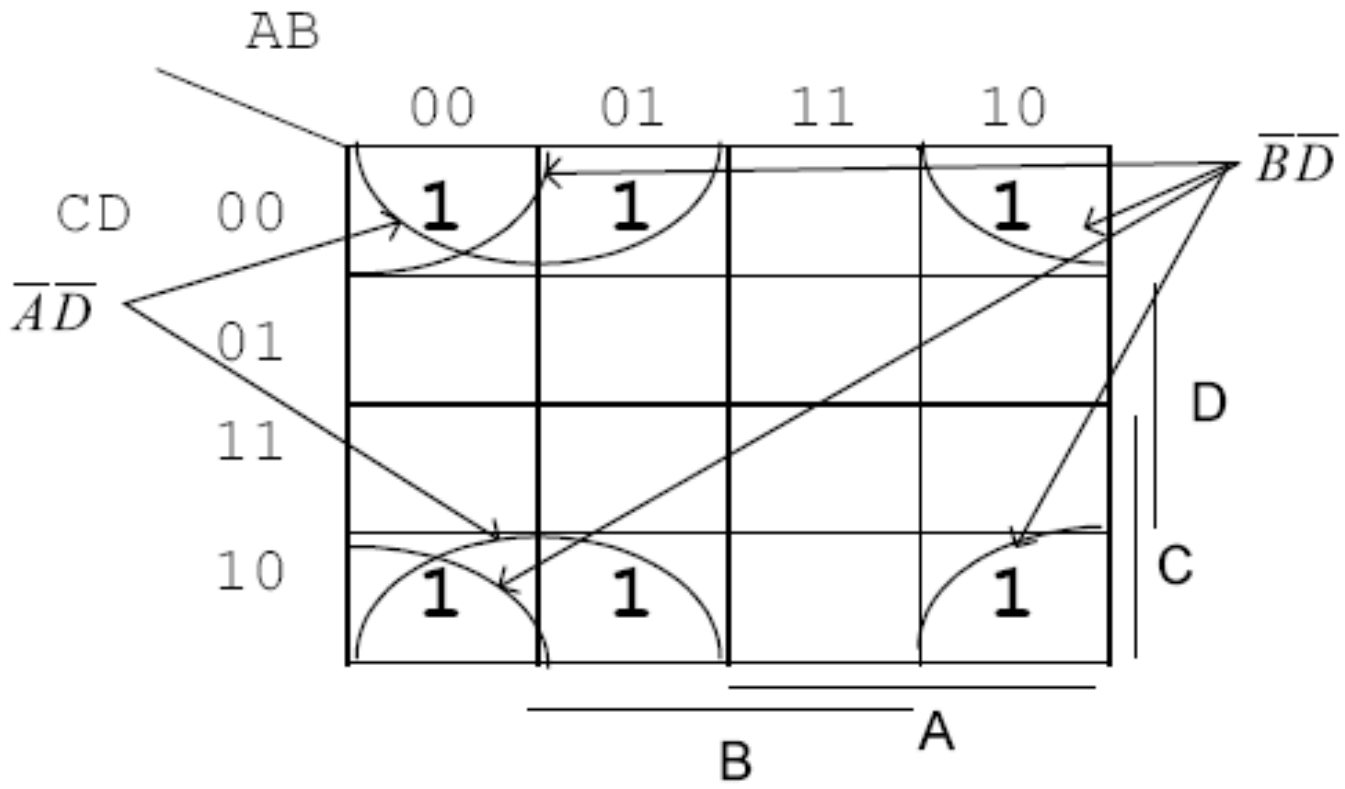
Minimizirajte funkciju
f=Σ(0, 4, 9,11,13,15) pomoću K-tablice



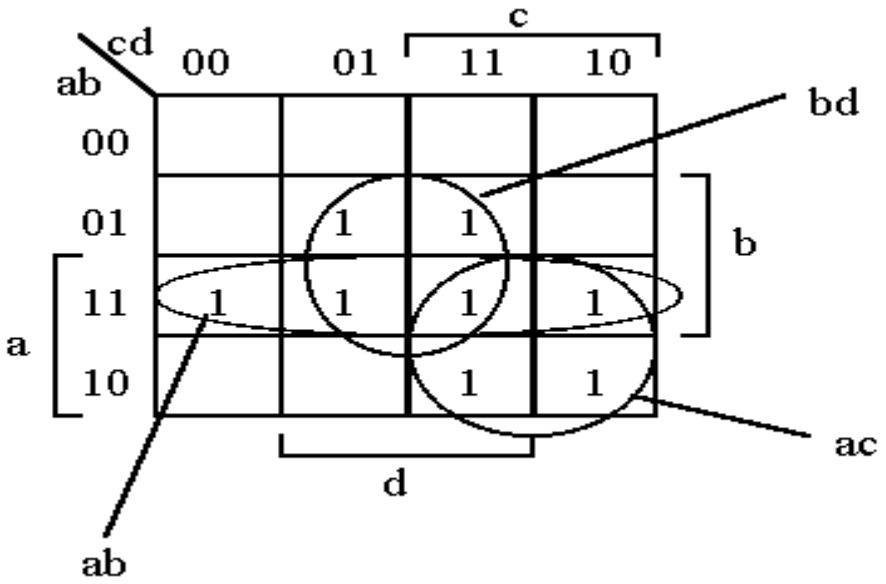
A	B	C	D	f
0	0	0	0	1
0	0	0	1	
0	0	1	0	
0	0	1	1	
0	1	0	0	1
0	1	0	1	
0	1	1	0	
0	1	1	1	
1	0	0	0	
1	0	0	1	1
1	0	1	0	
1	0	1	1	1
1	1	0	0	
1	1	0	1	1
1	1	1	0	
1	1	1	1	1


ABCD
0000 1
0001 0
0010 0
0011 0
0100 1
0101 0
0110 0
0111 0
1000 0
1001 1
1010 0
1011 1
1100 0
1101 1
1110 0
1111 1
AB
CD
00 01 11 10
00 1 1 0 0
01 0 0 1 1
11 0 0 1 1
10 0 0 0 0
AD
A'C'D'

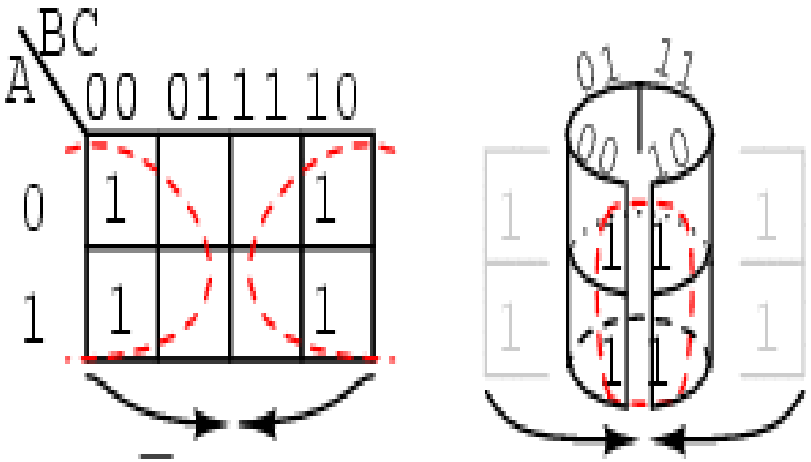
Minimizirajte funkciju
f=Σ(0, 2, 4, 6, 8,10) pomoću K-tablice



$$f = \overline{A}\,\overline{D} + \overline{B}\,\overline{D}$$



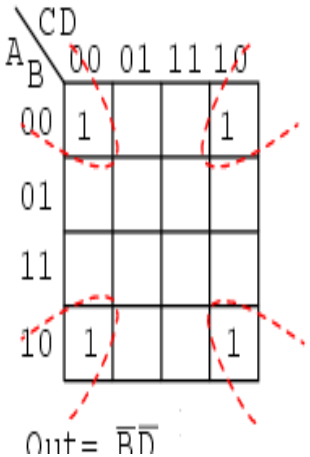
$$Out = \overline{A}\,\overline{B}\,\overline{C} + A\,\overline{B}\,\overline{C} + \overline{A}\,B\,\overline{C} + A\,B\,\overline{C}$$



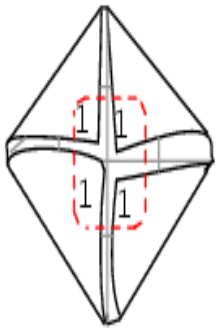
$$Out = \overline{C}$$

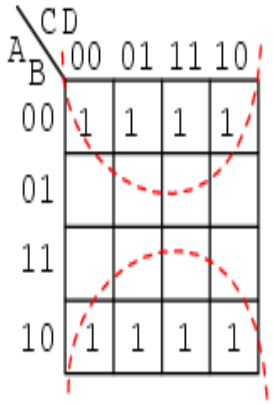
$Out = \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}C\overline{D} + \overline{A}\overline{B}CD + \overline{A}B\overline{C}\overline{D} + \overline{A}B\overline{C}D + \overline{A}BC\overline{D} + \overline{A}BCD + AB\overline{C}\overline{D} + AB\overline{C}D + ABC\overline{D} + ABCD + A\overline{B}\overline{C}\overline{D} + A\overline{B}\overline{C}D + A\overline{B}C\overline{D} + A\overline{B}CD$

$Out = \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}C\overline{D} + \overline{A}\overline{B}CD + \overline{A}B\overline{C}\overline{D} + \overline{A}B\overline{C}D + \overline{A}BC\overline{D} + \overline{A}BCD + AB\overline{C}\overline{D} + AB\overline{C}D + ABC\overline{D} + ABCD + A\overline{B}\overline{C}\overline{D} + A\overline{B}\overline{C}D + A\overline{B}C\overline{D} + A\overline{B}CD$



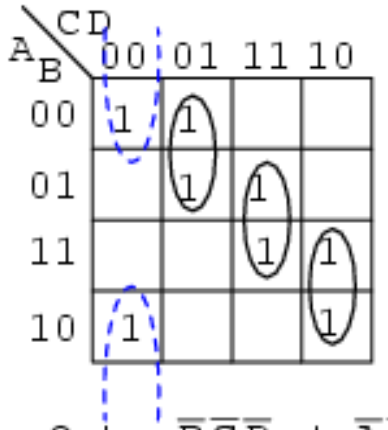
$Out = \overline{B}\overline{D}$

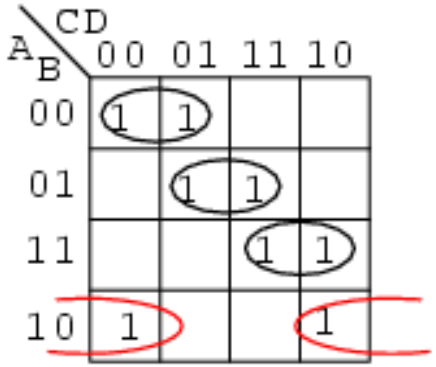




$Out = \overline{B}$

$Out = \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}\overline{C}D + \overline{A}B\overline{C}D + \overline{A}BCD + ABCD + ABC\overline{D} + A\overline{B}\overline{C}\overline{D} + A\overline{B}C\overline{D}$

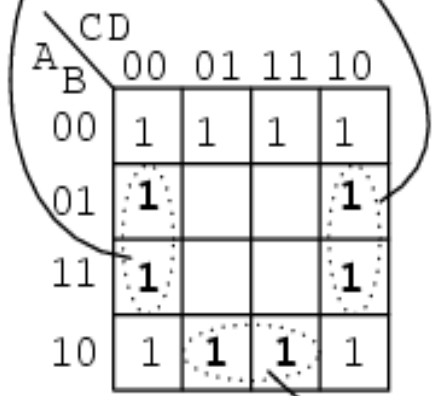


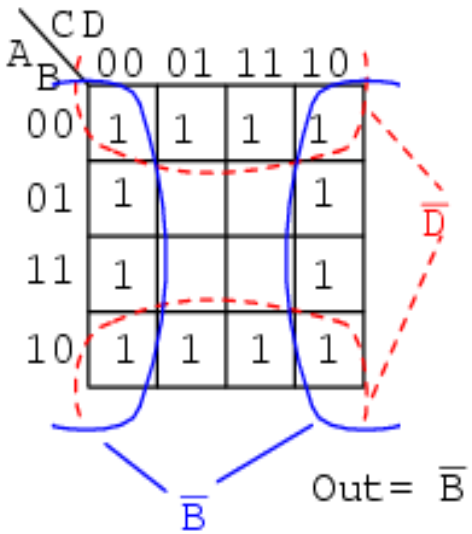


$Out = \overline{B}\overline{C}\overline{D} + \overline{A}\overline{C}D + BCD + AC\overline{D}$

$Out = \overline{A}\overline{B}\overline{C} + \overline{A}BD + ABC + A\overline{B}\overline{D}$

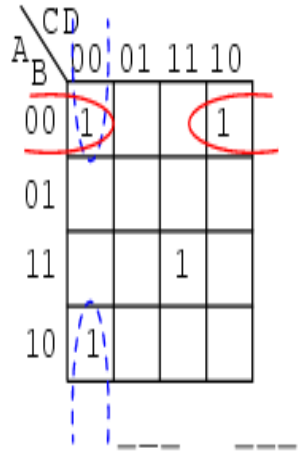
Out= $\overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}CD + \overline{A}\overline{B}C\overline{D}$
$+ B\overline{C}\overline{D} + BC\overline{D} + A\overline{B}\overline{C}\overline{D} + A\overline{B}D + A\overline{B}C\overline{D}$





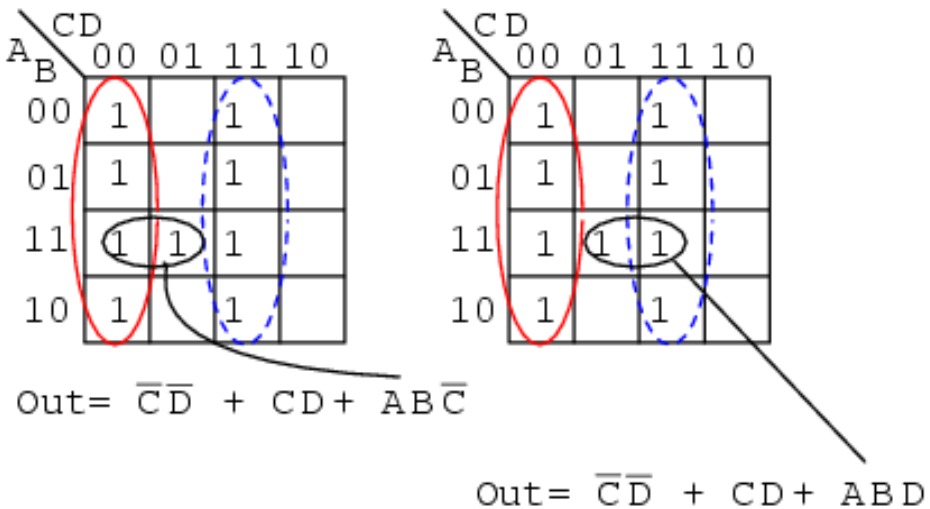
Out= $\overline{B} + \overline{D}$

Out= $\overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}C\overline{D} + A\overline{B}\overline{C}\overline{D} + ABCD$



Out= $\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}\overline{D} + ABCD$

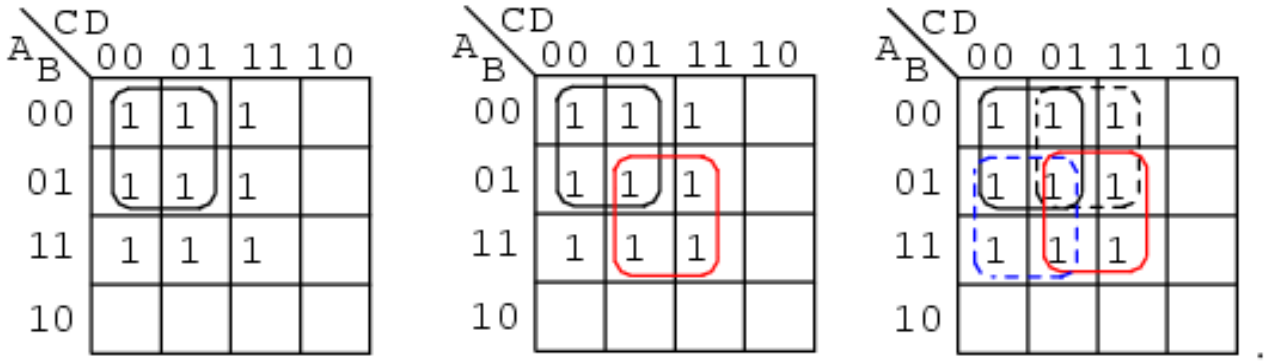
$$Out = \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}CD + \overline{A}B\overline{C}\overline{D} + \overline{A}BCD + AB\overline{C}\overline{D} + ABC\overline{D} + ABCD + A\overline{B}\overline{C}\overline{D} + A\overline{B}CD$$



$$Out = \overline{C}\overline{D} + CD + AB\overline{C}$$

$$Out = \overline{C}\overline{D} + CD + ABD$$

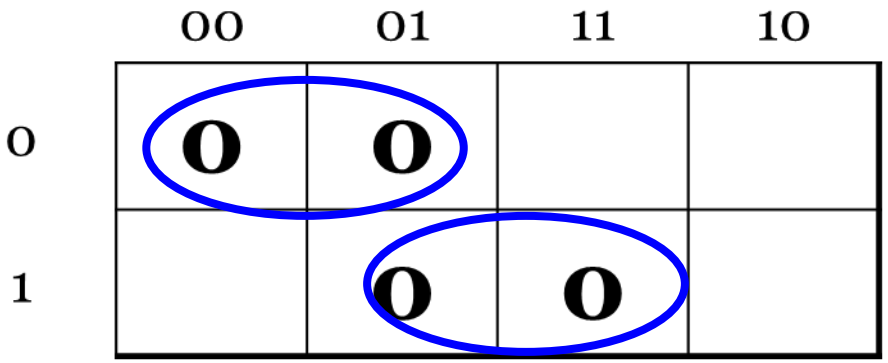
$$Out = \overline{A}\overline{B}\overline{C}\overline{D} + \overline{A}\overline{B}\overline{C}D + \overline{A}\overline{B}CD + \overline{A}B\overline{C}\overline{D} + \overline{A}B\overline{C}D + \overline{A}BCD + AB\overline{C}\overline{D} + AB\overline{C}D + ABCD$$



$$Out = \overline{A}\overline{C} + \overline{A}D + B\overline{C} + BD$$

Pomoću K-tablice minimizirajte funkciju:

f(A,B,C)=Π(0, 2, 3, 7) - rješenje



$$f = A\overline{C} + B\overline{C}$$

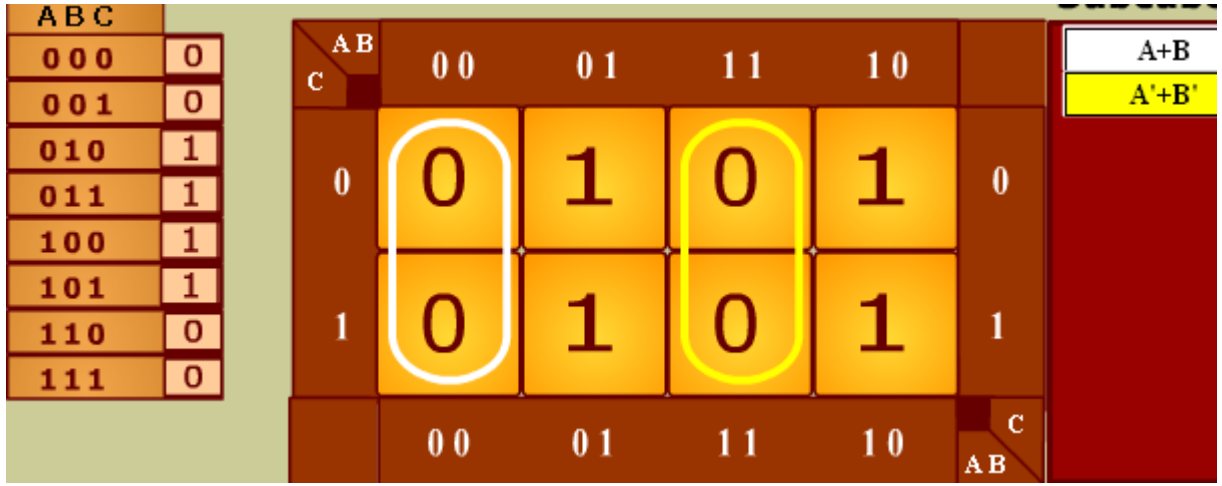
$$f = (A+C)(\overline{B}+\overline{C})$$

A	B	C	f
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	0

pomoću K-tablice minimizirati funkciju:

$f(A,B,C)=\Pi(0, 1, 6, 7)$

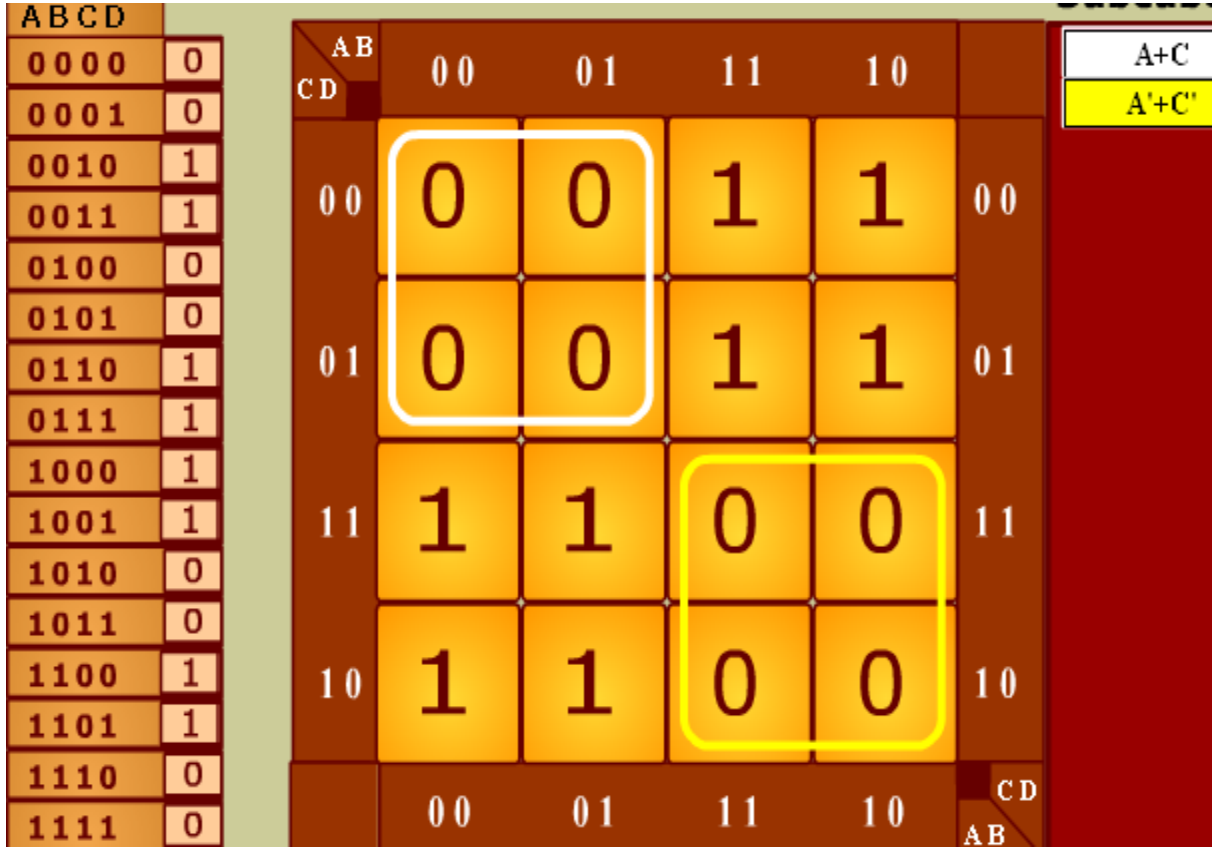
A	B	C	f
0	0	0	0
0	0	1	0
0	1	0	1
0	1	1	1
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	0



Pomoću K-tablice minimizirati funkciju

f= Π(0,1,4,5,10,11,14,15)

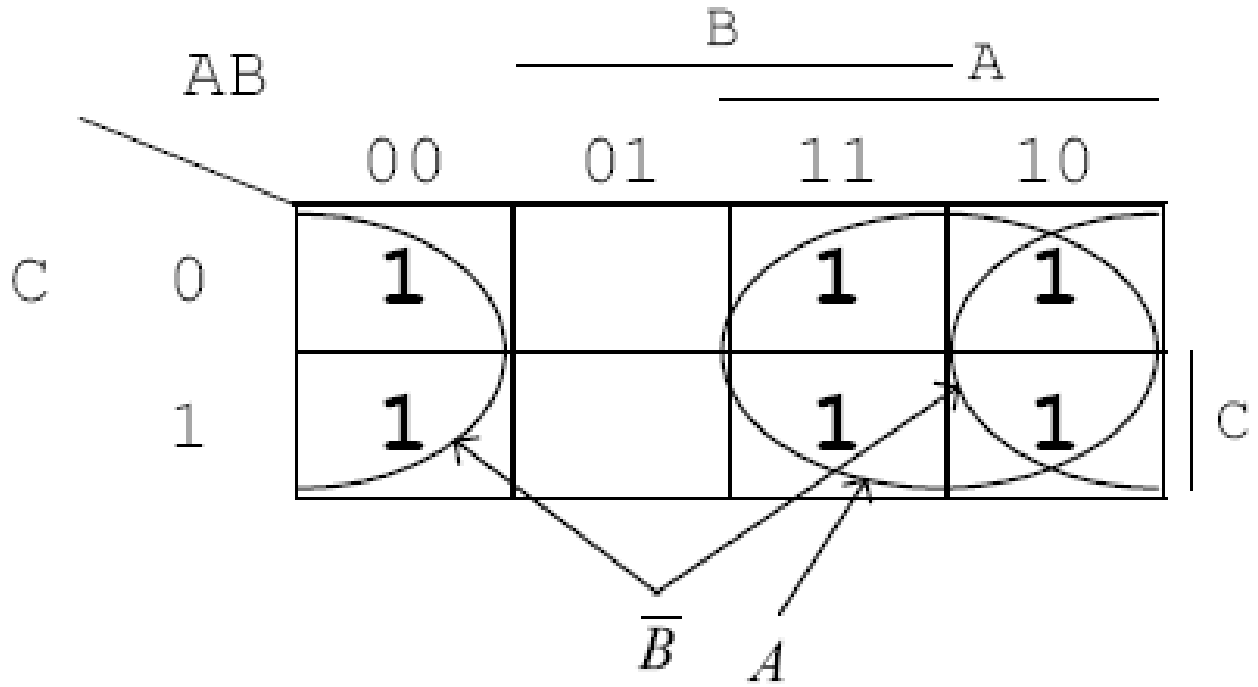
A	B	C	D	f
0	0	0	0	0
0	0	0	1	0
0	0	1	0	1
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	1
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	0
1	0	1	1	0
1	1	0	0	1
1	1	0	1	1
1	1	1	0	0
1	1	1	1	0



Pomoću K-tablice minimizirati funkciju :

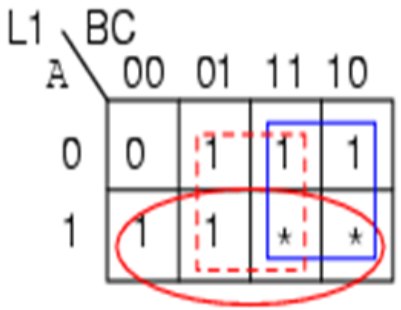
$$
\begin{aligned}
f &= \overline{A}\,\overline{B}\overline{C} + AC + AB\overline{C} + \overline{A}\,\overline{B}C + A\overline{B}\,\overline{C} \\
&= \overline{A}\,\overline{B}\overline{C} + A(B + \overline{B})C + AB\overline{C} + \overline{A}\,\overline{B}C + A\overline{B}\,\overline{C} \\
&= \overline{A}\,\overline{B}\overline{C} + ABC + A\overline{B}C + AB\overline{C} + \overline{A}\,\overline{B}C + A\overline{B}\,\overline{C} \\
&= \sum(0,7,5,6,1,4) \\
&= \sum(0,1,4,5,6,7)
\end{aligned}
$$

- f= A + $\overline{B}$

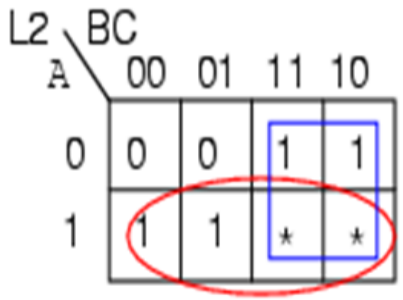


Neodređena polja

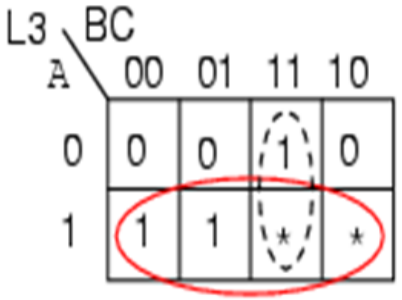
- Ukoliko funkcija sadrži polja za koja nije određena vrijednost (označena sa d,?,*,n,x…), njih tumačimo na način koji nam odgovara u cilju grupiranja jedinica u što manji broj što većih grupa.



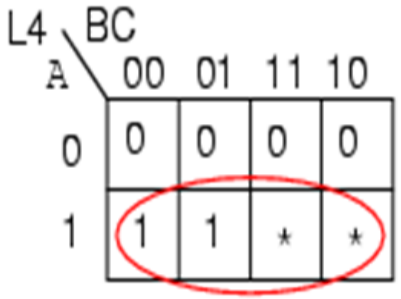
L1 = A + B + C



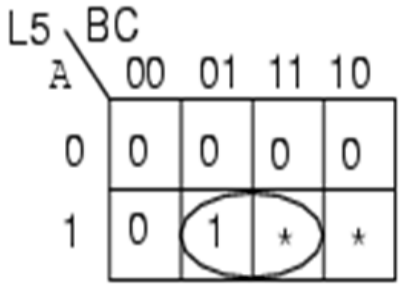
L2 = A + B



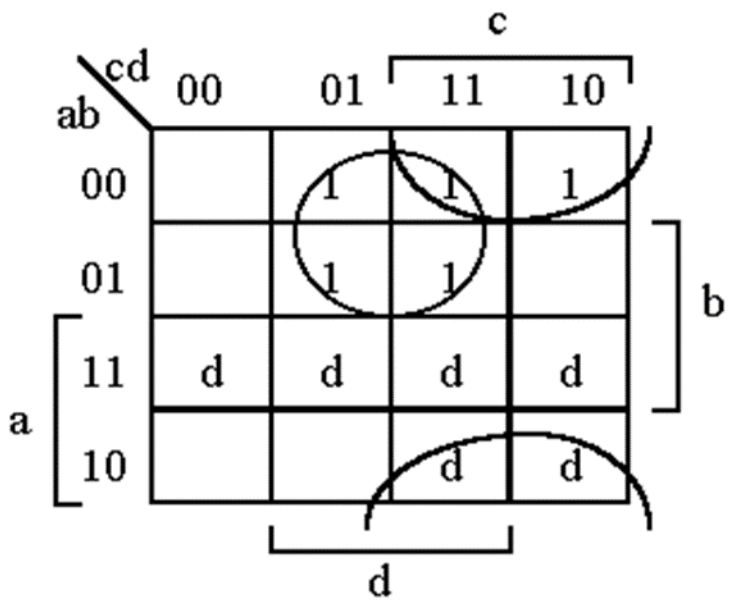
L3 = A + B C



L4 = A

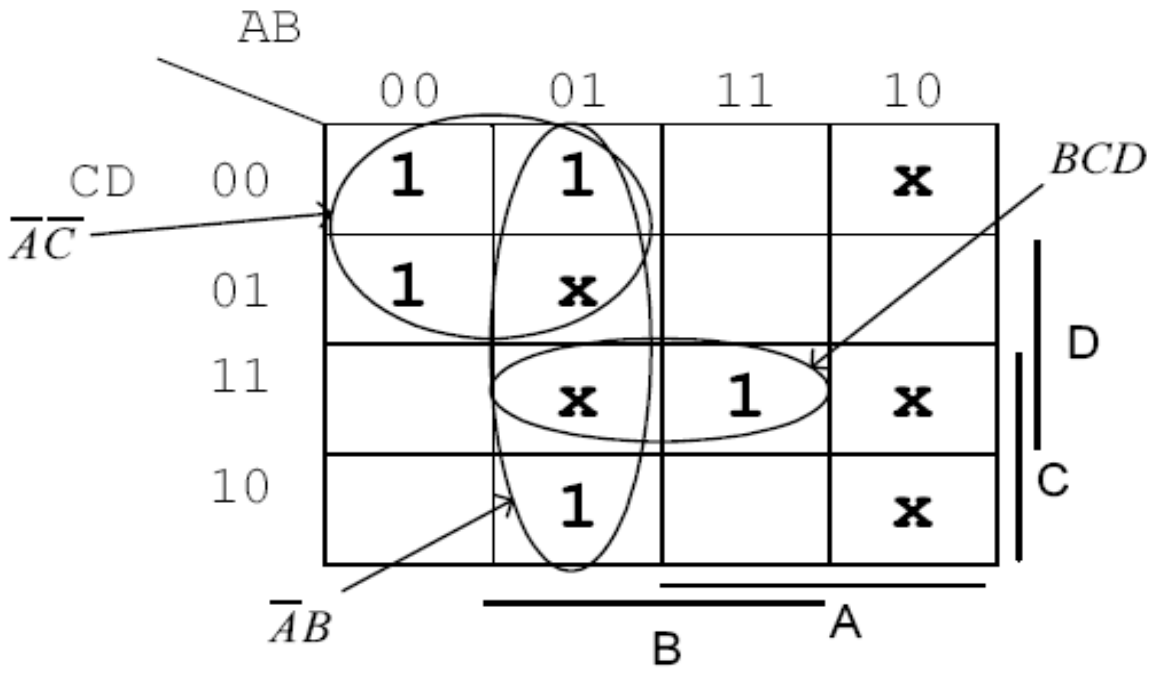


L5 = A C



Pomoću K-tablice minimizirati funkciju

$$f = \sum m(0,1,4,6,15) + \sum d(5,7,8,10,11)$$



$$f = \overline{A}\,\overline{C} + \overline{A}B + BCD$$