Saathi

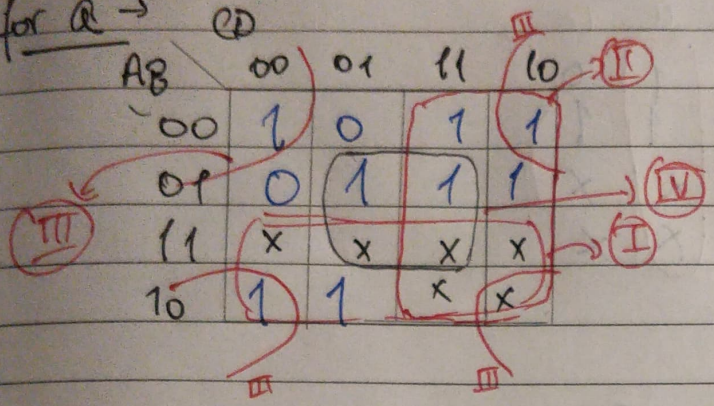
Date ___/___/___

Simplify using a 4 variable K-Map:

We consider × as 1

X: don't care

for a →

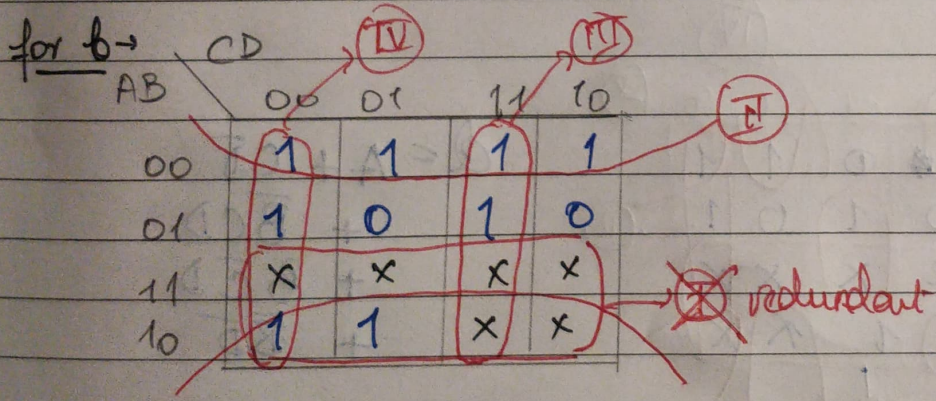


$$a = A + C + \bar{D}\bar{B} + B.D$$

(I) (II) (III) (IV)

$$a = A + C + \overline{B \oplus D}$$

for b →



$$b = \cancel{A} + \bar{B} + CD + \bar{C}\bar{D}$$

$$b = \cancel{A} + \bar{B} + \overline{C \oplus D}$$

Date ___/___/_____

for C →

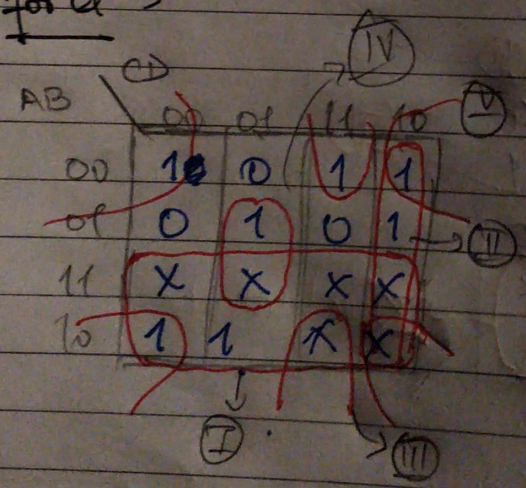
AB \ CD	00	01	11	10
00	1	1	1	0
01	1	1	1	1
11	X	X	X	X
10	1	1	X	X

$$C = \bar{C} + CD + B$$

Since $(a + \bar{a}a) = (x + a)$

$$C = \bar{C} + D + B$$

for d →



$$d = A + C\bar{D} + \bar{B}CD + B\bar{C}D + \bar{B}\bar{D}$$

$$d = A + C\bar{D} + BC\bar{D} + \bar{B}(CD + \bar{D})$$

$$d = A + \bar{B}C + \bar{B}\bar{D} + B\bar{C}D + \bar{C}\bar{D}$$

$$d = A + \bar{B}C + \bar{B}\bar{D} + C\bar{D} + B\bar{C}D$$

$A \cup (A' \cap B) = (A \cup A') \cap (A \cup B) = A \cup B$

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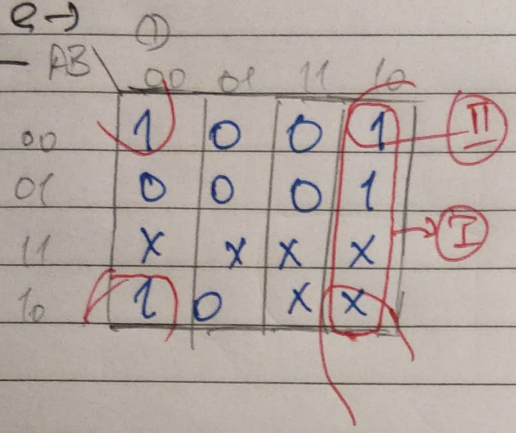
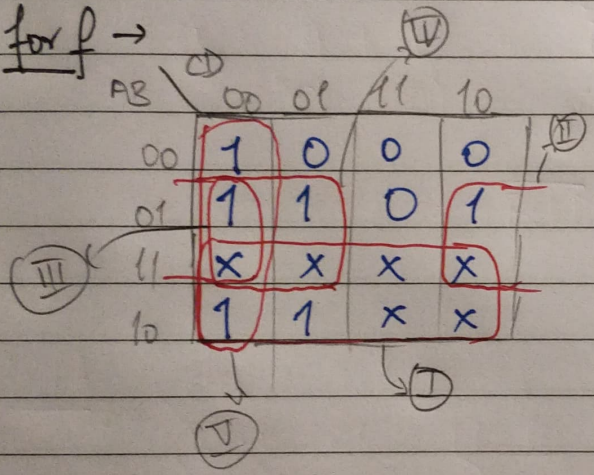
for e →



$e = \bar{B}\bar{D} + C\bar{D}$

(II) (I)

for f →



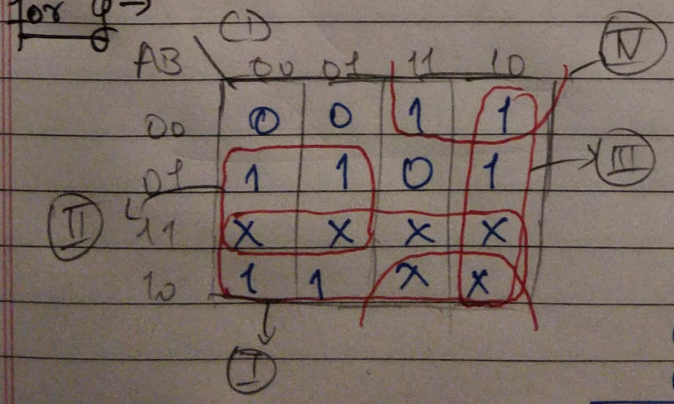
$f = A + B\bar{D} + B\bar{C}\bar{D} + B\bar{C} + \bar{C}\bar{D}$

(I) (II) (III) (IV)

$f = A + B\bar{D}(1+\bar{C}) + B\bar{C} + \bar{C}\bar{D}$

$\Rightarrow f = A + B\bar{D} + B\bar{C} + \bar{C}\bar{D} = A + B(\bar{C}+\bar{D}) + \bar{C}\bar{D}$

for g →



$g = A + B\bar{C} + C\bar{D} + \bar{B}C$

(I) (II) (III) (III)

$g = A + B \oplus C + C\bar{D}$