

# In-class Exercise 8

(PAR 12)

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- Using ESPRESSO's unate complement function, find the complement of the following functions
  - $F1(a, b, c) = b'c + bc'$  (HINT: is this unate?)
  - $F2(a, b, c) = a' + b$

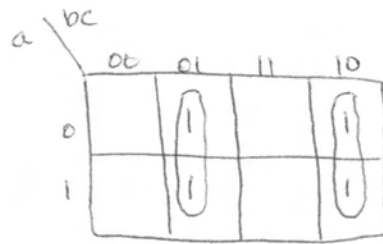
$$F1(a,b,c) = b'c + bc'$$

At first glance F1 is not unate because both b and c appear in true and complemented form.

next step - check if the cover is prime

yes, cover is prime so we can conclude

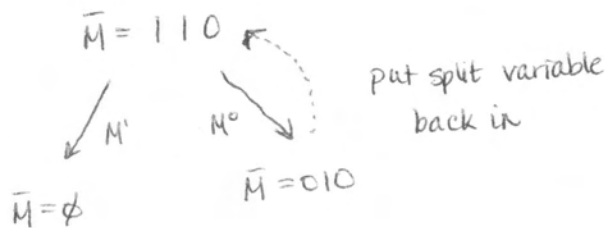
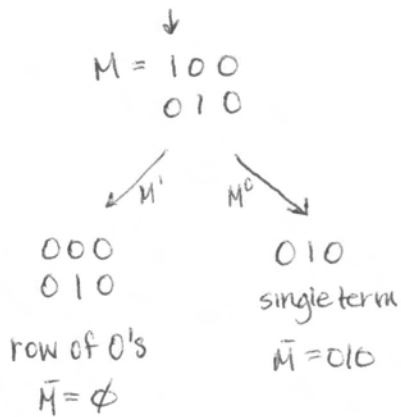
F1 is not unate and we can't use ESPRESSO'S UNATE COMPLEMENT function



$$F2(a,b,c) = a' + b$$

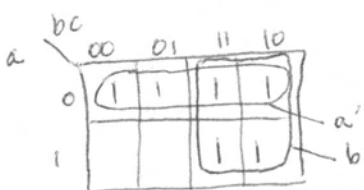
function is unate, try unate complement

$$F2 = \begin{matrix} 022 \\ 212 \end{matrix} \quad M = \begin{matrix} 100 \\ 010 \end{matrix} \quad V = 012$$

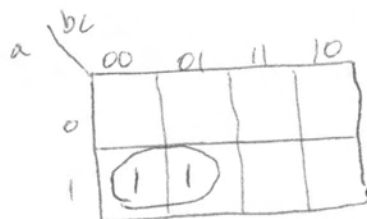


$$\begin{matrix} \bar{M} = 110 \\ V = 012 \end{matrix} \rangle \bar{F} = 102 \quad (ab')$$

check with k-map



$$F2 = a' + b$$



$$\bar{F2} = ab'$$

yes! we have found the complement of F2.