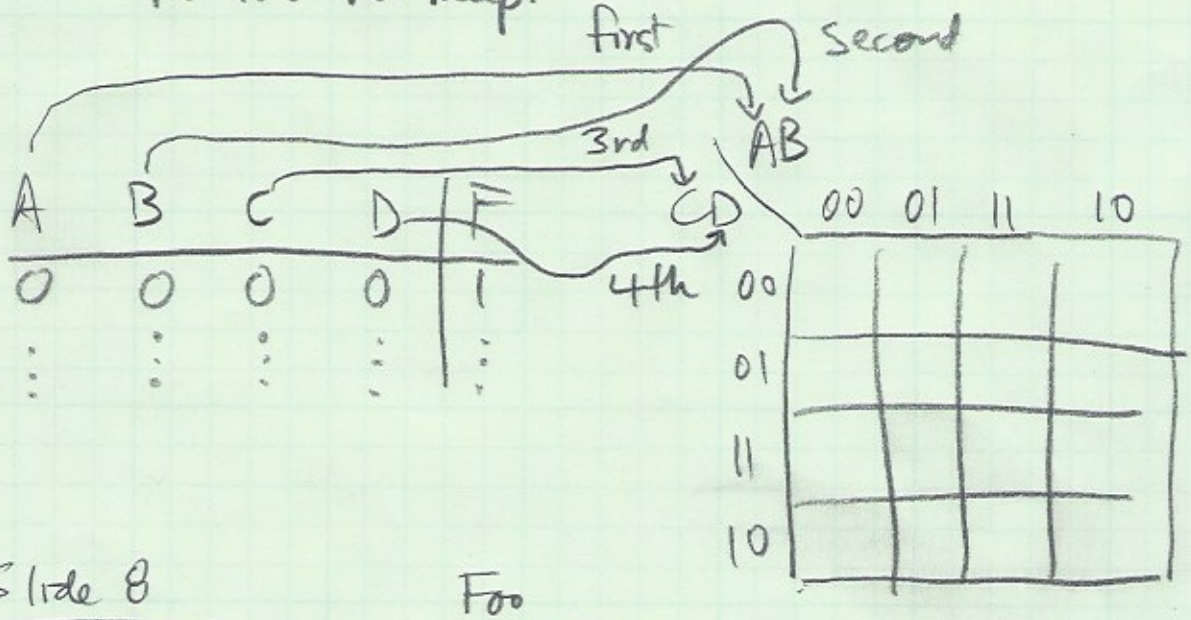
ENEL 353 Section 02 Lecture

Fri Oct 4 2019

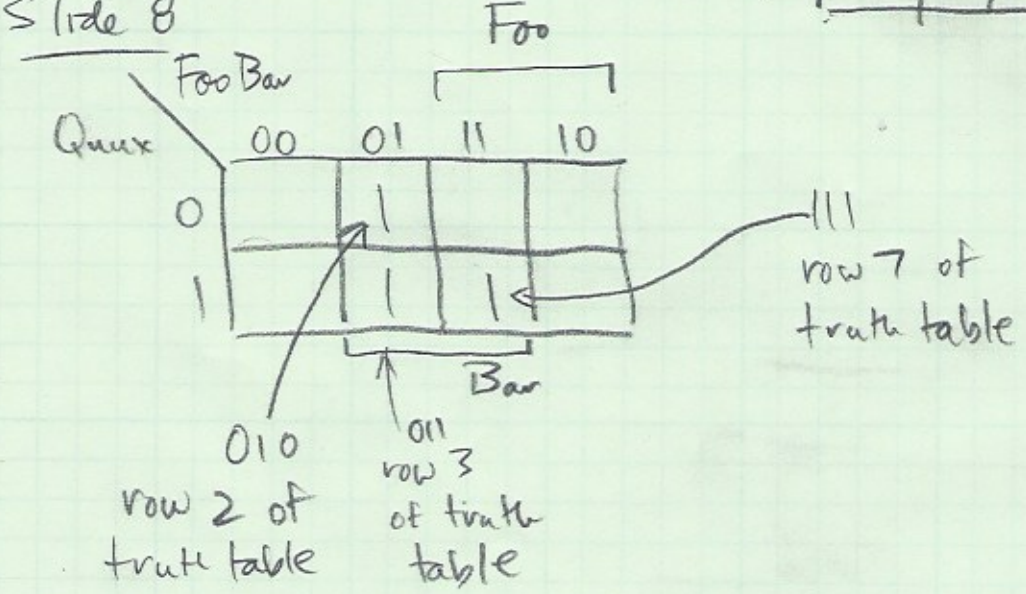
Set 5, Slide 7

Further notes...

- Remember - use Gray code order for row and column headings
- The order of the input variables in the truth table gives the order of variables in the K-map.



Slide 8



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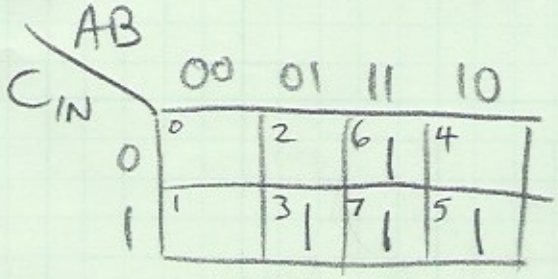


Slide 13

Cells for $\bar{A}B\bar{C}$ and $\bar{A}\bar{B}\bar{C}$ are adjacent – only the literals for B differ.

Cells for $AB\bar{C}$ and $A\bar{B}\bar{C}$ are not adjacent – literals for B and C both differ.

Slide 14

(A) No – no shared border

(B) No – no shared border – diagonal neighbours are not adjacent

(C) Yes

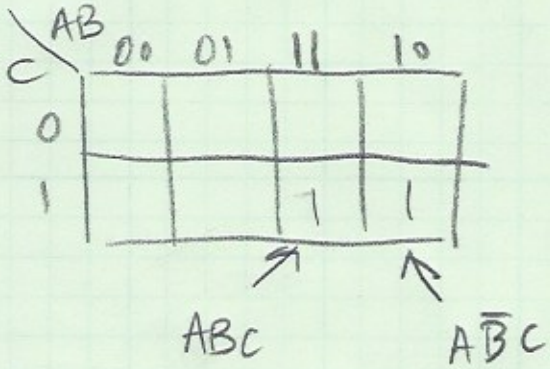
(D) Yes

(E) Yes – the left and right edges of the map are a shared border

(F) No – these are diagonal neighbours

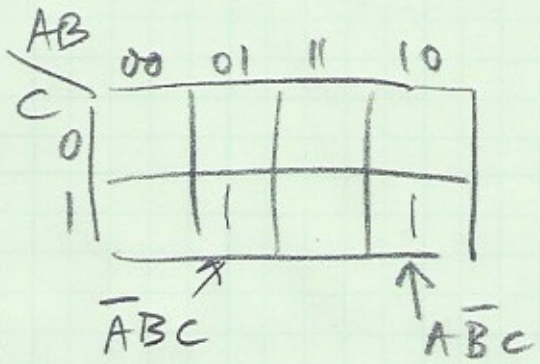
Slide 16

$A\bar{B}C$ and ABC



Adjacent minterms, adjact cells.

$A\bar{B}C$, $\bar{A}BC$



Minterms not adjacent, cells not adjacent.

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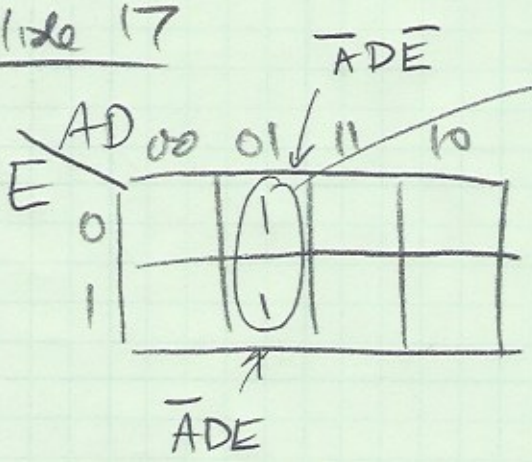


pair of adjacent cells can be grouped together to make the product $\bar{A}D$

Slide 21

How do we know the location of, for example, cell 14?

$14_{10} = 1110$

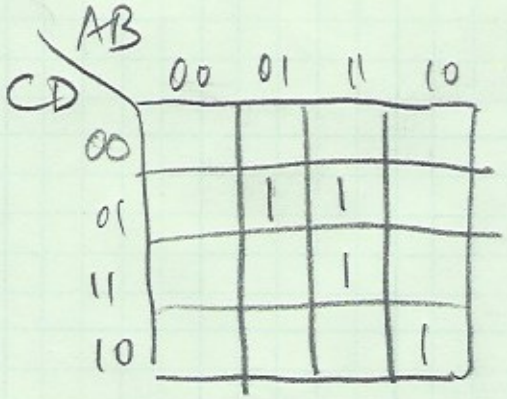
1110: selects column, selects row

Slide 22

SOP canonical form for F

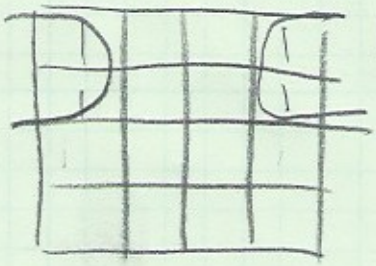
$$F = \bar{A}B\bar{C}D + A\bar{B}C\bar{D} + AB\bar{C}D + ABCD$$
$$0101 \quad 1010 \quad 1101$$

K-map for F

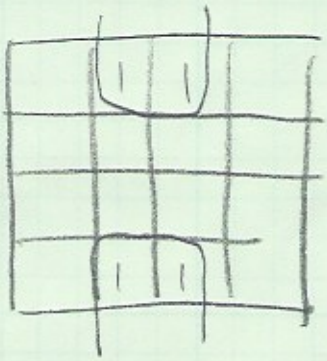


Slide 25

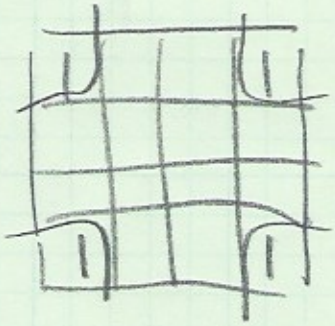
Some 4-cell groups with wrapping



left-right wrap

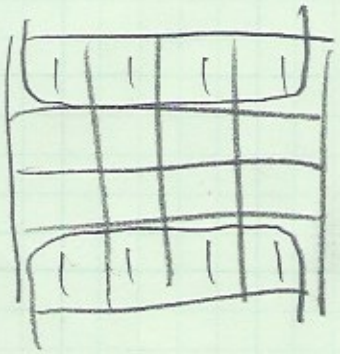


top-bottom wrap

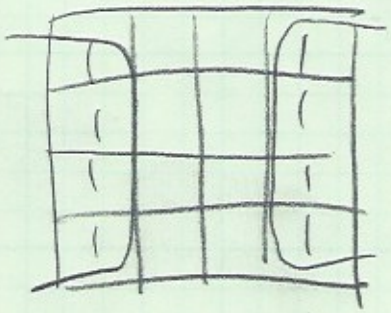


wrap both left-right and top-bottom to cover 4 corners

8-cell rectangles with wrapping



top-bottom



left-right

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