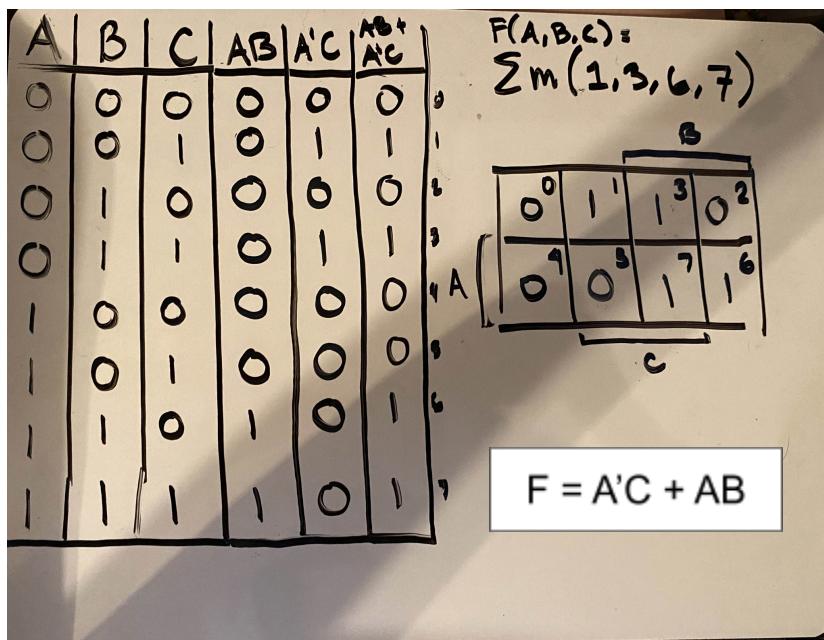
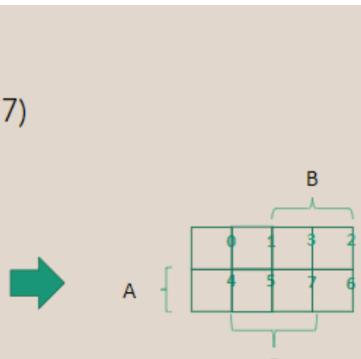


Assignment B-2 Karnaugh-Map

• Exercise 3

$$\cdot F(A, B, C) = \sum m(1, 3, 6, 7)$$

x	y	z	F	Minterm
0	0	0	0	m_0
0	0	1	1	m_1
0	1	0	0	m_2
0	1	1	1	m_3
1	0	0	0	m_4
1	0	1	0	m_5
1	1	0	1	m_6
1	1	1	1	m_7

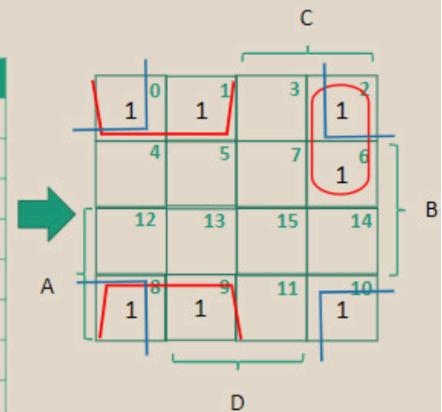


• Exercise 4

$$\cdot F(A, B, C, D) = \sum m(0, 1, 2, 6, 8, 9, 10)$$

A	B	C	D	F	Minterm
0	0	0	0	1	m_0
0	0	0	1	1	m_1
0	0	1	0	1	m_2
0	0	1	1	0	m_3
0	1	0	0	0	m_4
0	1	0	1	0	m_5
0	1	1	0	1	m_6
0	1	1	1	0	m_7

A	B	C	D	F	Minterm
1	0	0	0	1	m_8
1	0	0	1	1	m_9
1	0	1	0	1	m_{10}
1	0	1	1	0	m_{11}
1	1	0	0	0	m_{12}
1	1	0	1	0	m_{13}
1	1	1	0	0	m_{14}
1	1	1	1	0	m_{15}



'A	B	C	D	'F	'A	B	C	D	'F
0	0	0	0	1	1	0	0	0	1
0	0	0	1	1	0	0	0	1	1
0	0	1	0	1	0	0	1	0	1
0	0	1	1	0	1	0	1	0	0
0	1	0	0	0	1	0	0	0	0
0	1	0	1	0	1	0	1	0	0
0	1	1	0	1	1	0	0	0	0
0	1	1	1	0	1	1	1	1	0

Handwritten Karnaugh map and minimized expression:

Map (labeled C at top):

1	1	1	1
1	1	1	1
1	1	1	1
1	1	1	1

Minimized expression: $BC' + A'CD' + B'D'$

• Exercise 5

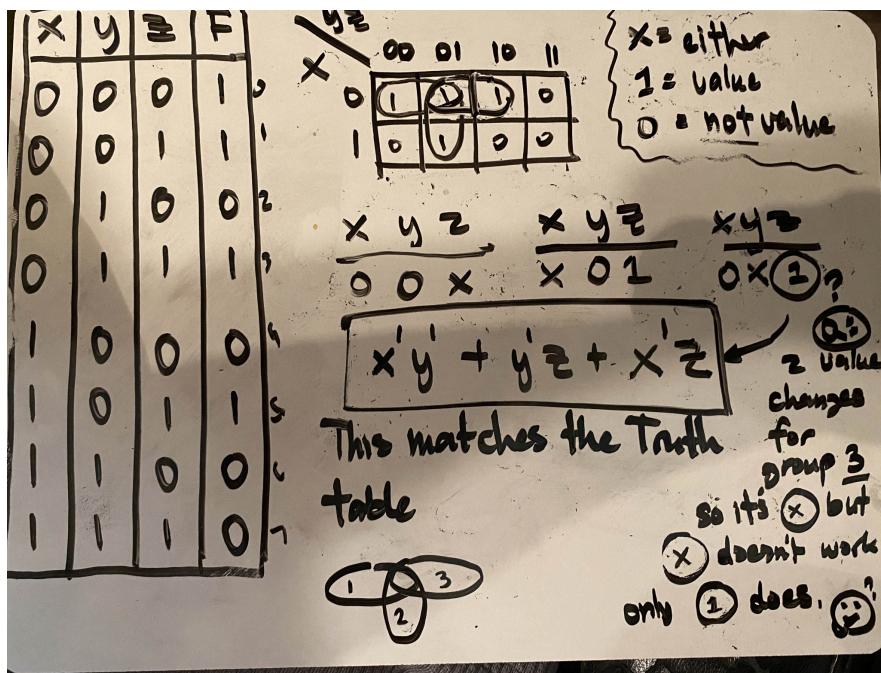
- A Karnaugh map is nothing more than a special form of truth table, useful for reducing logic functions into minimal Boolean expressions.
- Here is a truth table for a specific three-input logic circuit.

x	y	z	F
0	0	0	1
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	0
1	1	1	0

- Complete the following Karnaugh map, according to the values found in the above truth table:

	BC	00	01	10	11
A	0	0	1	3	2
1	4	5	7	6	

- Find the simplified algebraic expression



• Exercise 6

- $F(A, B, C, D) = \sum(0, 2, 8, 9, 10, 11, 14, 15)$

- Show the truth table for the function F

- Complete the following Karnaugh map, according to the values found in the above truth table:

- Find the simplified algebraic expression

A	B	C	D	F
0	0	0	0	0
0	0	0	1	1
0	0	1	0	1
0	0	1	1	0
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	1
1	0	0	0	1
1	0	0	1	1
1	0	1	0	1
1	0	1	1	0
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	1

