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Simplify the boolean function of boolean variable specified below and draw the corresponding digital circuit of the simplified function.

$$F(a, b, c) = \bar{a} b c + a \bar{b} c + a b \bar{c}$$

Concepts in practice: Digital Logic.

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Due date: 10/07/2019 (mm/dd/yyyy)

Files to be used:

Files to be delivered: homework\_\_04.pdf

Let's try to create the Karnaugh Map for the function  $F(a, b, c) = \neg a * b * c + a * \neg b * c + a * b * c$  :

		$A, B$			
		00	01	11	10
$C$	0				
	1				

Revising that the function receives 1 in cases

- a)  $a=1, b=1, c=1$ ,
- b)  $a=1, b=0, c=1$  and
- c)  $a=0, b=1, c=1$ ,

we can fill in the table like this:

		$A, B$			
		00	01	11	10
$C$	0	0	0	1	0
	1	0	1	1	0

If 1 values are neighbours from either horizontal or vertical side, we can count them as clusters:

		$A, B$			
		00	01	11	10
$C$	0	0	0	1	0
	1	0	1	1	0

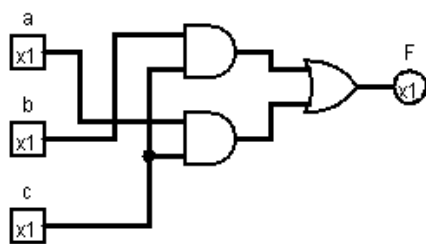
It helps to simplify the functions from

$$F(a, b, c) = \neg a * b * c + a * \neg b * c + a * b * c$$

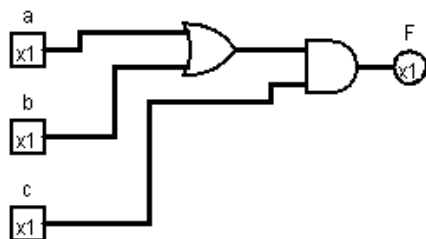
to

$$F(a, b, c) = b * c + a * c = c * (b + a)$$

There are two possible circuit implementations for this function:



Product of sums ( $c*b+c*a$ )



Sum of products ( $c*(b+a)$ )