Exercícios Portas Lógicas

Álgebra Booleana – parte 2

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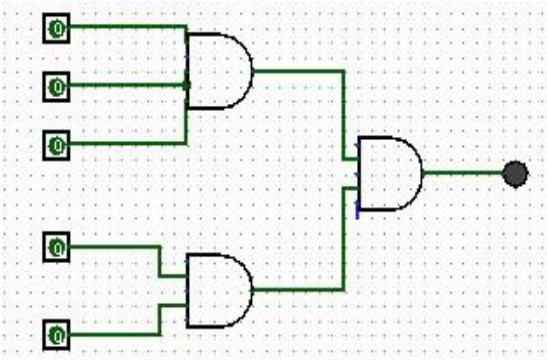
1)Dado o circuito abaixo faça a tabela verdade e a expressão booleana

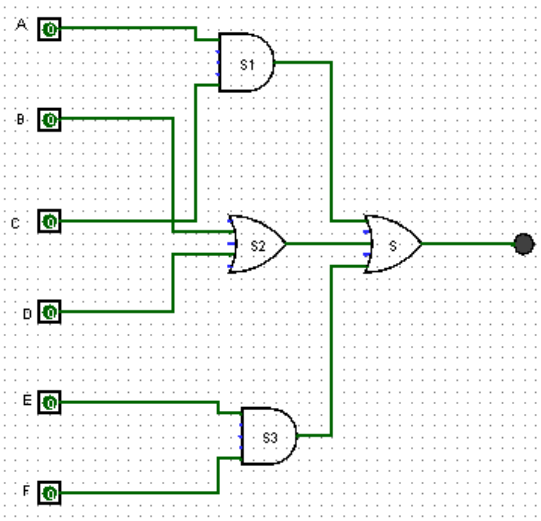


S = S1*S2 S = (A*B*C) * (D*E)

A	B	C	D	E	S1	S2	S
0	0	0	0	0	0	0	0
0	0	0	0	1	0	0	0
0	0	0	1	0	0	0	0
0	0	0	1	1	0	1	0
0	0	1	0	0	0	0	0
0	0	1	0	1	0	0	0
0	0	1	1	0	0	0	0
0	0	1	1	1	0	1	0
0	1	0	0	0	0	0	0
0	1	0	0	1	0	0	0
0	1	0	1	0	0	0	0
0	1	0	1	1	0	1	0
0	1	1	0	0	0	0	0
0	1	1	0	1	0	0	0
0	1	1	1	0	0	0	0
0	1	1	1	1	0	1	0
1	0	0	0	0	0	0	0
1	0	0	0	1	0	0	0
1	0	0	1	0	0	0	0
1	0	0	1	1	0	1	0
1	0	1	0	0	0	0	0
1	0	1	0	1	0	0	0
1	0	1	1	0	0	0	0
1	0	1	1	1	0	1	0
1	1	0	0	0	0	0	0
1	1	0	0	1	0	0	0
1	1	0	1	0	0	0	0
1	1	0	1	1	0	1	0
1	1	1	0	0	1	0	0
1	1	1	0	1	1	0	0
1	1	1	1	0	1	0	0
1	1	1	1	1	1	1	1

2)Dada a expressão booleana apresente o circuito e a tabela verdade

S = (AC) + (B+D) + (EF)

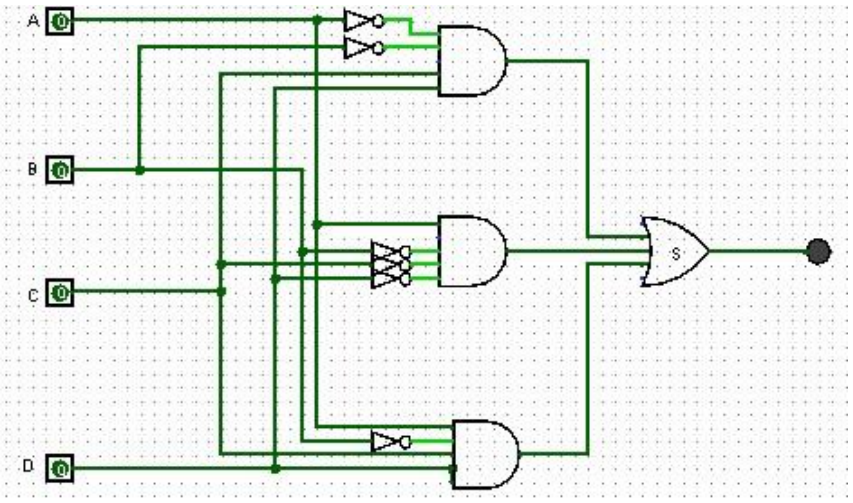


A	C	B	D	E	F	S1	S2	S3	S4
0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0
0	0	0	0	1	0	0	0	0	0
0	0	0	0	1	1	0	0	1	1
0	0	0	1	0	0	0	1	0	1
0	0	0	1	0	1	0	1	0	1
0	0	0	1	1	0	0	1	0	1
0	0	0	1	1	1	0	1	1	1
0	0	1	0	0	0	0	1	0	1
0	0	1	0	0	1	0	1	0	1
0	0	1	0	1	0	0	1	0	1
0	0	1	0	1	1	0	1	1	1
0	0	1	1	0	0	0	1	0	1
0	0	1	1	0	1	0	1	0	1
0	0	1	1	1	0	0	1	0	1
0	0	1	1	1	1	0	1	1	1
0	1	0	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	0	0
0	1	0	0	1	0	0	0	0	0
0	1	0	0	1	1	0	0	1	1
0	1	0	1	0	0	0	1	0	1
0	1	0	1	0	1	0	1	0	1
0	1	0	1	1	0	0	1	0	1
0	1	0	1	1	1	0	1	1	1
0	1	1	0	0	0	0	1	0	1
0	1	1	0	0	1	0	1	0	1
0	1	1	0	1	0	0	1	0	1
0	1	1	0	1	1	0	1	1	1
0	1	1	1	0	0	0	1	0	1
0	1	1	1	0	1	0	1	0	1
0	1	1	1	1	0	0	1	0	1
0	1	1	1	1	1	0	1	1	1

1	0	0	0	0	0	0	0	0	0
1	0	0	0	0	1	0	0	0	0
1	0	0	0	1	0	0	0	0	0
1	0	0	0	1	1	0	0	1	1
1	0	0	1	0	0	0	1	0	1
1	0	0	1	0	1	0	1	0	1
1	0	0	1	1	0	0	1	0	1
1	0	0	1	1	1	0	1	1	1
1	0	1	0	0	0	0	1	0	1
1	0	1	0	0	1	0	1	0	1
1	0	1	0	1	0	0	1	0	1
1	0	1	0	1	1	0	1	1	1
1	0	1	1	0	0	0	1	0	1
1	0	1	1	0	1	0	1	0	1
1	0	1	1	1	0	0	1	0	1
1	0	1	1	1	1	0	1	1	1
1	1	0	0	0	0	1	0	0	1
1	1	0	0	0	1	1	0	0	1
1	1	0	0	1	0	1	0	0	1
1	1	0	0	1	1	1	0	1	1
1	1	0	1	0	0	1	1	0	1
1	1	0	1	0	1	1	1	0	1
1	1	0	1	1	0	1	1	1	1
1	1	0	1	1	1	1	1	1	1
1	1	1	0	0	0	1	1	0	1
1	1	1	0	0	1	1	1	0	1
1	1	1	0	1	0	1	1	0	1
1	1	1	0	1	1	1	1	1	1
1	1	1	1	0	0	1	1	0	1
1	1	1	1	0	1	1	1	0	1
1	1	1	1	1	0	1	1	0	1
1	1	1	1	1	1	1	1	1	1

3)Dada a tabela verdade a seguir, desenhe o seu circuito lógico e a expressão booleana

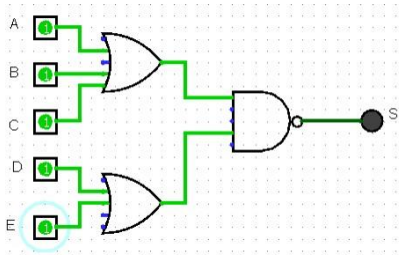
A	B	C	D	S
0	0	0	0	0
0	0	0	1	0
0	0	1	0	0
0	0	1	1	1
0	1	0	0	0
0	1	0	1	0
0	1	1	0	0
0	1	1	1	0
1	0	0	0	1
1	0	0	1	0
1	0	1	0	0
1	0	1	1	1
1	1	0	0	0
1	1	0	1	0
1	1	1	0	0
1	1	1	1	0



S = S1+S2+S3

S = (!A*!B*C*D) + (A*!B*!C*!D) + (A*!B*C*D)

1)Dado o circuito abaixo faça a tabela verdade e a expressão booleana



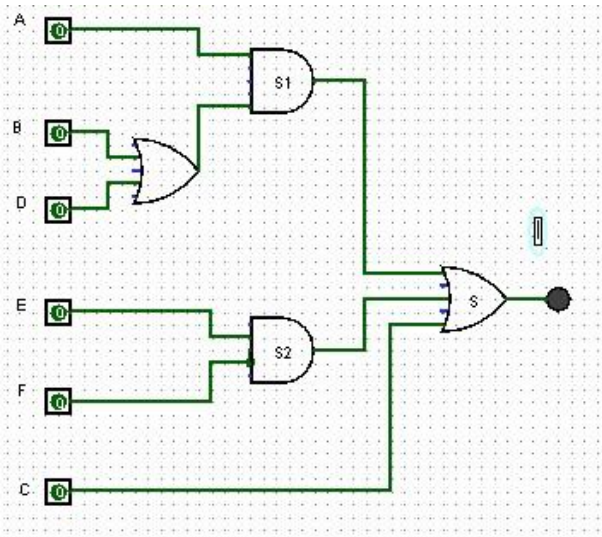
S = !((A+B+C) * (D+E))

A	B	C	D	E	S1	S2	S
0	0	0	0	0	0	0	1
0	0	0	0	1	0	1	1
0	0	0	1	0	0	1	1
0	0	0	1	1	0	1	1
0	0	1	0	0	1	0	1
0	0	1	0	1	1	1	0
0	0	1	1	0	1	1	0
0	0	1	1	1	1	1	0
0	1	0	0	0	1	0	1
0	1	0	0	1	1	1	0
0	1	0	1	0	1	1	0
0	1	0	1	1	1	1	0
0	1	1	0	0	1	0	1
0	1	1	0	1	1	1	0
0	1	1	1	0	1	1	0
0	1	1	1	1	1	1	0
1	0	0	0	0	1	0	1
1	0	0	0	1	1	1	0
1	0	0	1	0	1	1	0
1	0	0	1	1	1	1	0
1	0	1	0	0	1	0	1
1	0	1	0	1	1	1	0
1	0	1	1	0	1	1	0
1	0	1	1	1	1	1	0
1	1	0	0	0	1	0	1
1	1	0	0	1	1	1	0
1	1	0	1	0	1	1	0
1	1	0	1	1	1	1	0
1	1	1	0	0	1	0	1
1	1	1	0	1	1	1	0
1	1	1	1	0	1	1	0
1	1	1	1	1	1	1	0

2) Dada a expressão booleana apresente o circuito e a tabela verdade

S = A(B+D) + (EF) + C

A	B	D	E	F	C	S1	S2	S
0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	1
0	0	0	0	1	0	0	0	0
0	0	0	0	1	1	0	0	1
0	0	0	1	0	0	0	0	0
0	0	0	1	0	1	0	0	1
0	0	0	1	1	0	0	1	1
0	0	0	1	1	1	0	1	1
0	0	1	0	0	0	0	0	0
0	0	1	0	0	1	0	0	1
0	0	1	0	1	0	0	0	0
0	0	1	0	1	1	0	0	1
0	0	1	1	0	0	0	0	0
0	0	1	1	0	1	0	0	1
0	0	1	1	1	0	0	1	1
0	0	1	1	1	1	0	1	1
0	1	0	0	0	0	0	0	0
0	1	0	0	0	1	0	0	1
0	1	0	0	1	0	0	0	0
0	1	0	0	1	1	0	0	1
0	1	0	1	0	0	0	0	0
0	1	0	1	0	1	0	0	1
0	1	0	1	1	0	0	1	1
0	1	0	1	1	1	0	1	1
0	1	1	0	0	0	0	0	0
0	1	1	0	0	1	0	0	1
0	1	1	0	1	0	0	0	0
0	1	1	0	1	1	0	0	1
0	1	1	1	0	0	0	0	0
0	1	1	1	0	1	0	0	1
0	1	1	1	1	0	0	1	1
0	1	1	1	1	1	0	1	1
1	0	0	0	0	1	0	0	1
1	0	0	0	0	0	0	0	0
1	0	0	0	1	1	0	0	1
1	0	0	0	1	0	0	0	0
1	0	0	1	0	1	0	0	1
1	0	0	1	0	0	0	0	0
1	0	0	1	1	1	0	1	1
1	0	0	1	1	0	0	1	1
1	0	1	0	0	1	1	0	1
1	0	1	0	0	0	1	0	1
1	0	1	0	1	1	1	0	1
1	0	1	0	1	0	1	0	1
1	0	1	1	0	1	1	0	1
1	0	1	1	0	0	1	0	1
1	0	1	1	1	1	1	1	1
1	0	1	1	1	0	1	1	1
1	1	0	0	0	1	1	0	1
1	1	0	0	0	0	1	0	1
1	1	0	0	1	1	1	0	1
1	1	0	0	1	0	1	0	1
1	1	0	1	0	1	1	0	1
1	1	0	1	0	0	1	0	1
1	1	0	1	1	1	1	1	1
1	1	0	1	1	0	1	1	1
1	1	0	0	0	1	1	0	1
1	1	0	0	0	0	1	0	1
1	1	0	0	1	1	1	0	1
1	1	0	0	1	0	1	0	1
1	1	0	1	0	1	1	0	1
1	1	0	1	0	0	1	0	1
1	1	0	1	1	1	1	1	1
1	1	0	1	1	0	1	1	1



3) Dada a tabela verdade a seguir, desenhe o seu circuito lógico e a expressão booleana

A	B	C	D	S	
0	0	0	0	0	
0	0	0	1	1	S1 = !A*!B*!C*D
0	0	1	0	0	
0	0	1	1	1	S2 = !A*!B*C*D
0	1	0	0	0	
0	1	0	1	0	
0	1	1	0	0	
0	1	1	1	0	
1	0	0	0	1	S3 = A*!B*!C*!D
1	0	0	1	0	
1	0	1	0	0	
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	S4 =A*B*C*D

S = (S1)+(S2)+(S3)+(S4)

S = (!A*!B*!C*D) + (!A*!B*C*D) + (A*!B*!C*!D) + (A*B*C*D)