Exercícios Portas Lógicas

Álgebra Booleana – parte 1

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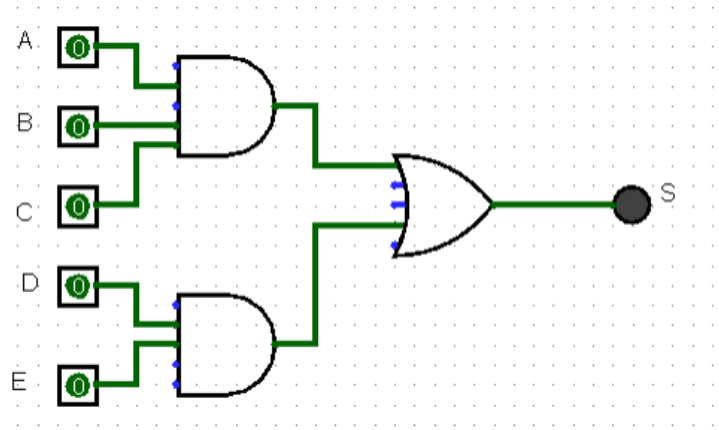
1) Dado o circuito abaixo faça a tabela verdade e a expressão booleana

Circuito



Expressão booleana

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

Tabela verdade

A	B	C	D	E	S1 (A* B * C)	S2 (D*E)	S(S1 + S2)
0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0
0	0	0	1	1	0	1	1
0	0	0	1	0	0	0	0
0	0	1	0	1	0	0	0
0	0	1	0	0	0	0	0
0	0	1	1	1	0	1	1
0	0	1	1	0	0	0	0
0	1	0	0	1	0	0	0
0	1	0	0	0	0	0	0
0	1	0	1	1	0	1	1
0	1	0	1	0	0	0	0
0	1	1	0	1	0	0	0
0	1	1	0	0	0	0	0
0	1	1	1	1	0	1	1
0	1	1	1	0	0	0	0
1	0	0	0	1	0	0	0

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

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

Expressão booleana

S = (AB) + (CD) + (EF)

Circuito

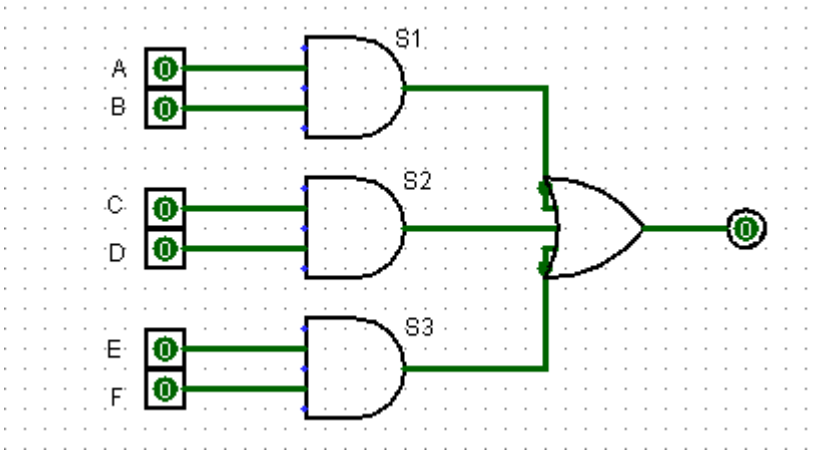


Tabela verdade

A	B	C	D	E	F	S1 (A *B)	S2 (C*D)	S3 (E*F)	S (S1+S2+S3)
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	0	0	0
0	0	0	1	0	1	0	0	0	0
0	0	0	1	1	0	0	0	0	0
0	0	0	1	1	1	0	0	1	1
0	0	1	0	0	0	0	0	0	0
0	0	1	0	0	1	0	0	0	0
0	0	1	0	1	0	0	0	0	0
0	0	1	0	1	1	0	0	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	0	0	0
0	1	0	1	0	1	0	0	0	0
0	1	0	1	1	0	0	0	0	0
0	1	0	1	1	1	0	0	1	1
0	1	1	0	0	0	0	0	0	0
0	1	1	0	0	1	0	0	0	0
0	1	1	0	1	0	0	0	0	0
0	1	1	0	1	1	0	0	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	0	0	0
1	0	0	1	0	1	0	0	0	0
1	0	0	1	1	0	0	0	0	0
1	0	0	1	1	1	0	0	1	1
1	0	1	0	0	0	0	0	0	0
1	0	1	0	0	1	0	0	0	0
1	0	1	0	1	0	0	0	0	0
1	0	1	0	1	1	0	0	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	0	0	1
1	1	0	1	0	1	1	0	0	1
1	1	0	1	1	0	1	0	0	1
1	1	0	1	1	1	1	0	1	1
1	1	1	0	0	0	1	0	0	1
1	1	1	0	0	1	1	0	0	1
1	1	1	0	1	0	1	0	0	1
1	1	1	0	1	1	1	0	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

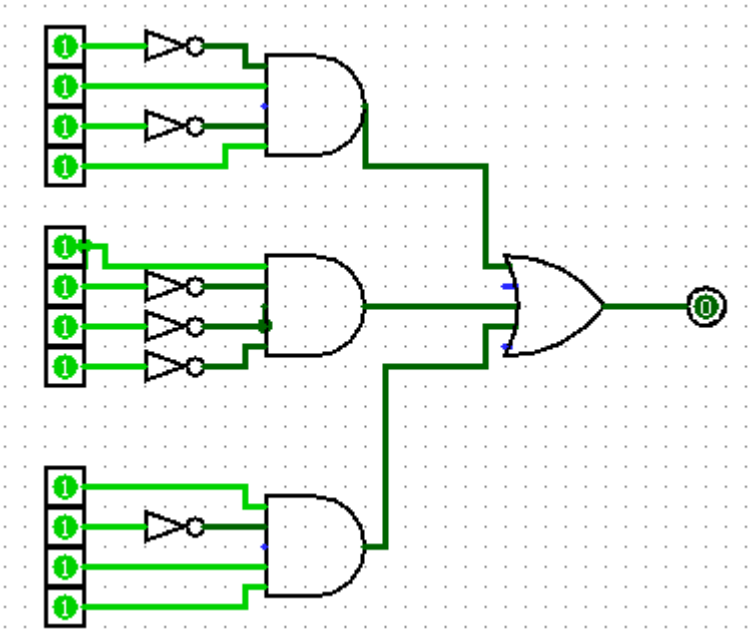
Tabela verdade

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

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

!A	B	!C	D
A	!B	!C	!D
A	!B	C	D

Circuito



Expressão booleana

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