Exercícios Portas Lógicas

Álgebra Booleana – parte 2

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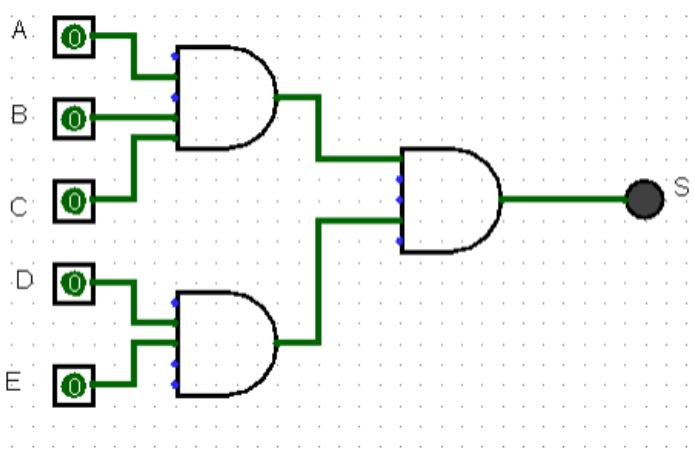
1) Dado o circuito abaixo faça a tabela verdade e a expressão booleana

Circuito



Expressão booleana

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

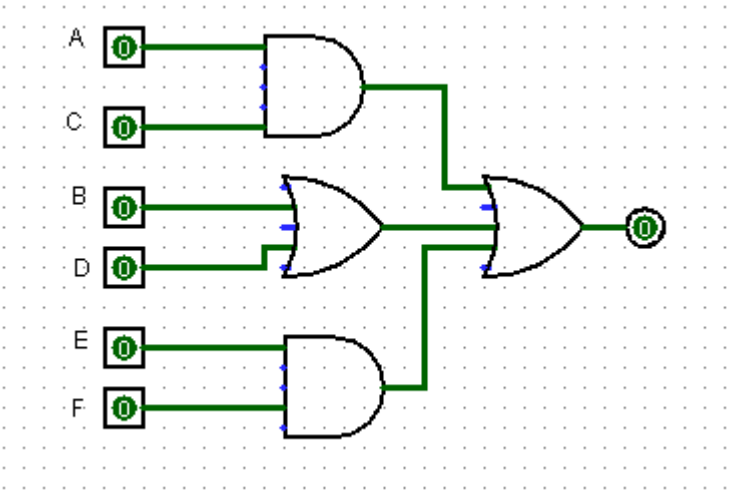
Tabela verdade

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

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

Circuito



Expressão booleana

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

Tabela verdade

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

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

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

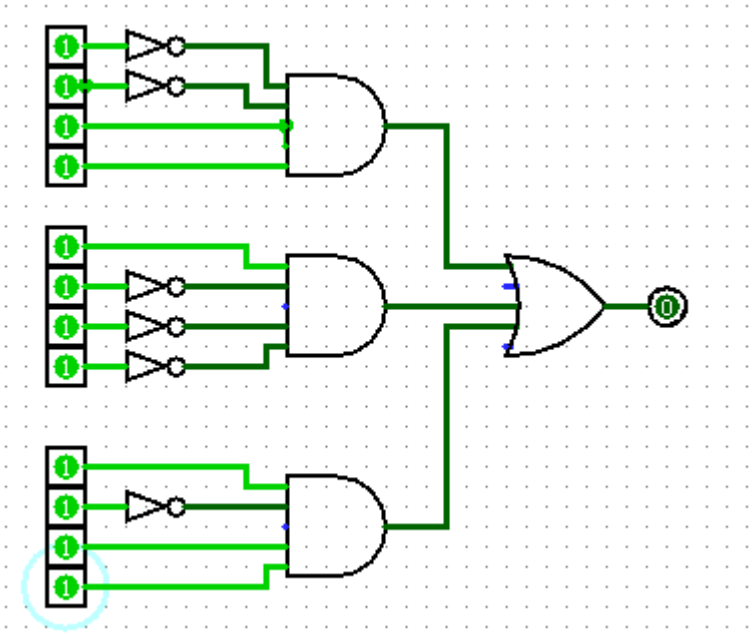
Tabela verdade

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

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

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

Circuito

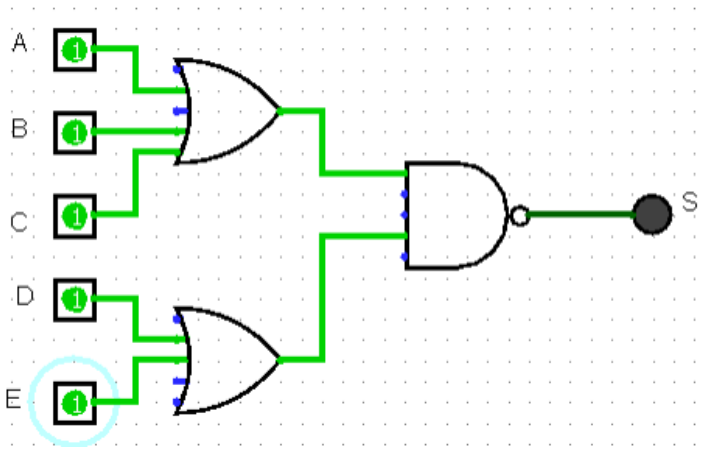


Expressão booleana

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

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	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 boolena apresente o circuito e a tabela verdade

Expressão booleana

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

Circuito

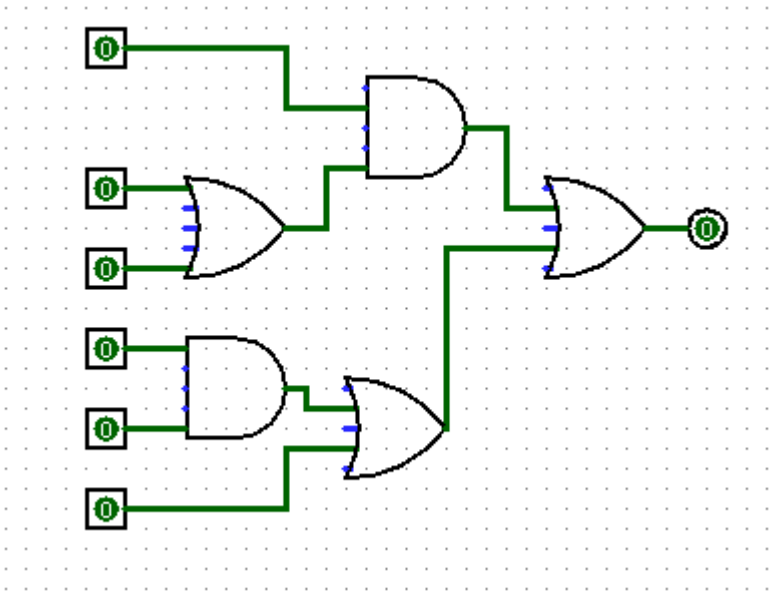


Tabela verdade

A	B	C	D	E	F	S1(B+D)	S2 (E*F)	S3 (S1 *A)	S4 (S2 +C)	S=(S3+S4)
0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	1	0	0	0	0	0
0	0	0	0	1	0	0	0	0	0	0
0	0	0	0	1	1	0	1	0	1	1
0	0	0	1	0	0	1	0	0	0	0
0	0	0	1	0	1	1	0	0	0	0
0	0	0	1	1	0	1	0	0	0	0
0	0	0	1	1	1	1	1	0	1	1
0	0	1	0	0	0	0	0	0	1	1
0	0	1	0	0	1	0	0	0	1	1
0	0	1	0	1	0	0	0	0	1	1
0	0	1	0	1	1	0	1	0	1	1
0	0	1	1	0	0	1	0	0	1	1
0	0	1	1	0	1	1	0	0	1	1
0	0	1	1	1	0	1	0	0	1	1
0	0	1	1	1	1	1	1	0	1	1
0	1	0	0	0	0	1	0	0	0	0
0	1	0	0	0	1	1	0	0	0	0
0	1	0	0	1	0	1	0	0	0	0

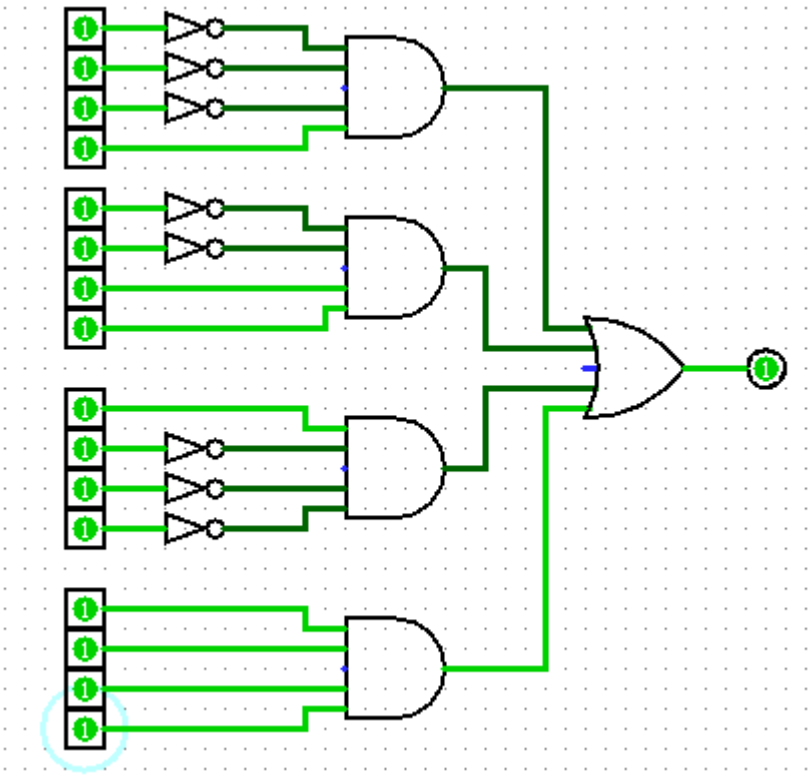
0	1	0	0	1	1	1	1	0	1	1
0	1	0	1	0	0	1	0	0	0	0
0	1	0	1	0	1	1	0	0	0	0
0	1	0	1	1	0	1	0	0	0	0
0	1	0	1	1	1	1	1	0	1	1
0	1	1	0	0	0	1	0	0	1	1
0	1	1	0	0	1	1	0	0	1	1
0	1	1	0	1	0	1	0	0	1	1
0	1	1	0	1	1	1	1	0	1	1
0	1	1	1	0	0	1	0	0	1	1
0	1	1	1	0	1	1	0	0	1	1
0	1	1	1	1	0	1	0	0	1	1
0	1	1	1	1	1	1	1	0	1	1
1	0	0	0	0	0	0	0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

Circuito



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

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

Expressão booleana

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