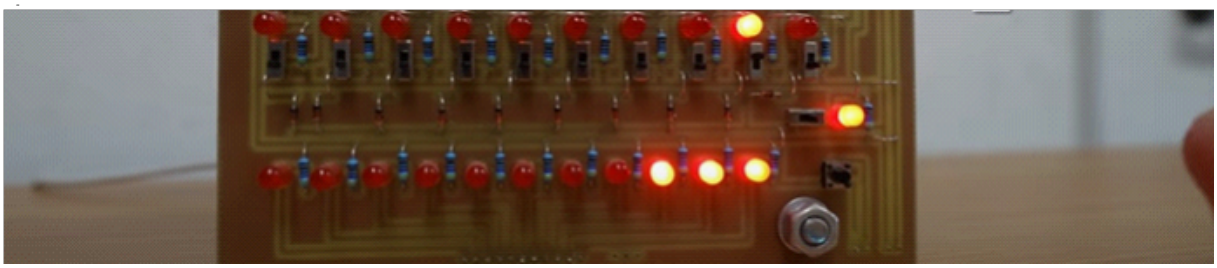
No E-Mail submissions will be accepted.
Submission formats and file naming:
File name : Pts_firstName_lastName_lab_3
File format: pdf or MS Word format
e.g. Pts_Donald_Trump_lab_3.pdf

Reading materials

Use the following link and write a one page summary about the movie.



1) Use truth table to prove the following identities:

(a) A + BC = (A+B)(A+C)

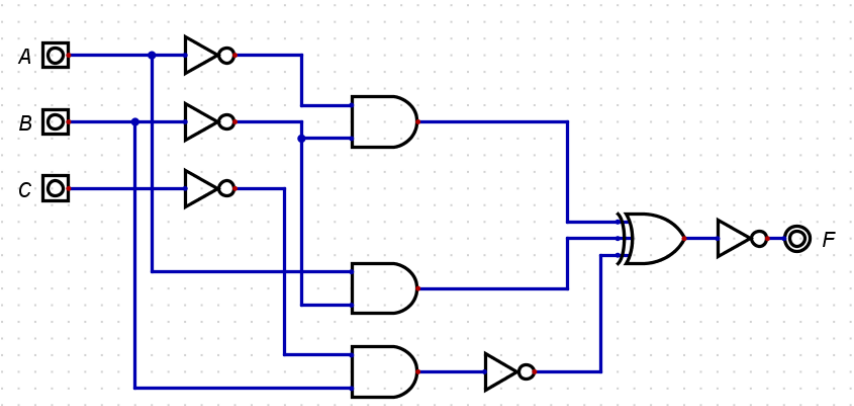
(b) A(B+C) = AB + AC

A	B	C	A+B	A+C	(A+B)(A+C)	BC	A+BC
0	0	0	0	0	0	0	0
0	0	1	0	1	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	1	1	1	1
1	0	0	1	1	1	0	1
1	0	1	1	1	1	0	1
1	1	0	1	1	1	0	1
1	1	1	1	1	1	1	1

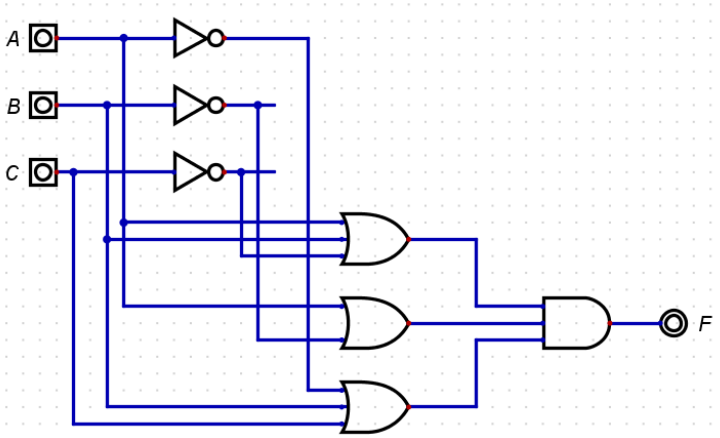
A	B	C	B+C	A(B+C)	AB	AC	AB+AC
0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	0
1	0	0	0	0	0	0	0
1	0	1	1	1	0	1	1
1	1	0	1	1	1	0	1
1	1	1	1	1	1	1	1

2) Write the Boolean expression equivalent to the following logic circuits. Do not simplify.

(a) F = (A'B' ⊕ AB' ⊕ (BC')')'

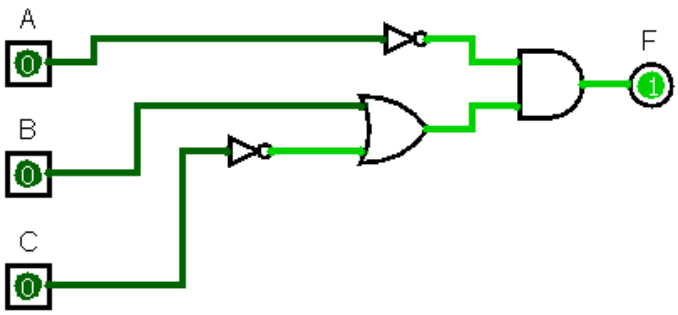


(b) F = (A+B+C').(A+B').(A'+B+C)

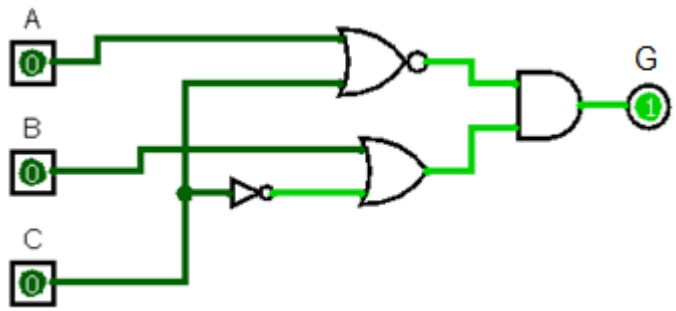


3) Draw the logic circuit realization of the following Boolean expressions as stated. Do not simplify!

a) F = A'(B+C')



b) G = (A+C)'(B+C')



4) Using the following table:

a) Obtain the logical expressions for **sum** and **Cout** (SOP).
b) Obtain the simplified versions of **sum** and **Cout**.
c) Draw the logic circuit for each function obtained in the part b.

A	B	Cin	sum	Cout
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

sum

A \ B, Cin	00	01	11	10
0		1		1
1	1		1	

Cout

A \ B, Cin	00	01	11	10
0			1	
1		1	1	1

	00	01	11	10
0			1	
1		1	1	1

	00	01	11	10
0			1	
1		1	1	1

	00	01	11	10
0			1	
1		1	1	1

a) sum = A'.B'.Cin + A'.B.Cin' + A.B'.Cin'+ A.B.Cin

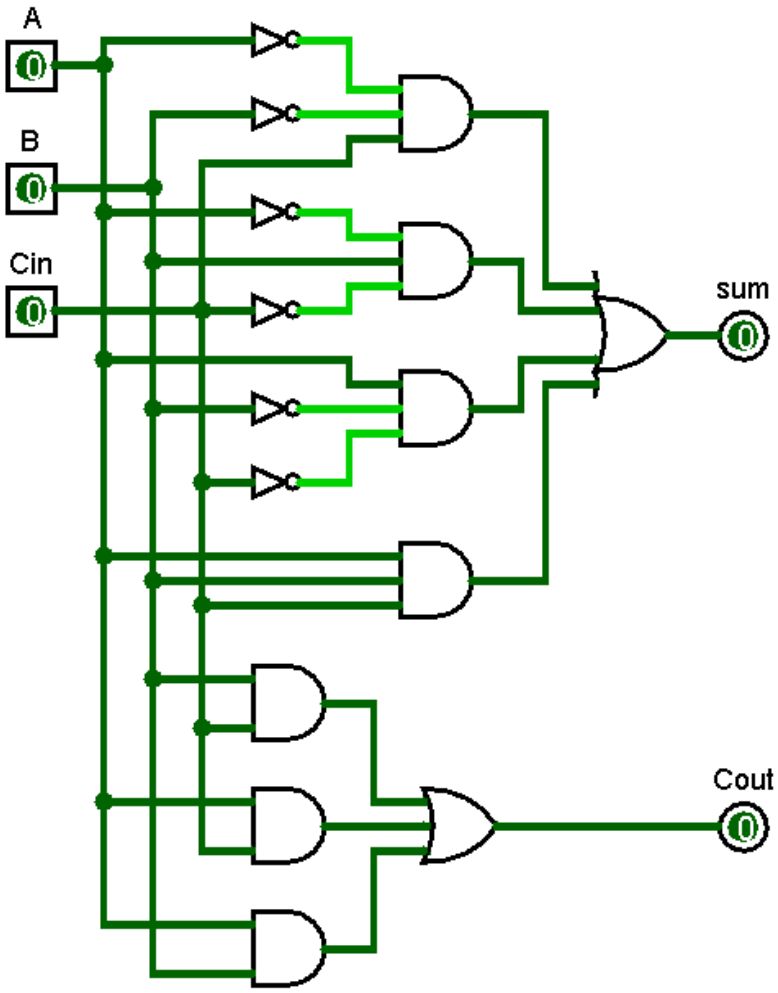
Cout = A'.B.Cin + A.B'.Cin + A.B.Cin'+ A.B.Cin

b)

Cout = B.Cin + A.Cin + A.B

Sum = A'.B'.Cin + A'.B.Cin' + A.B'.Cin'+ A.B.Cin

c)



5) Simplify each of the following expressions.

a) (A + B)(B + A')
= (A + B)B + (A + B)A'
= AB + BB + AA' + BA'
= AB + B + BA'
= AB + B(1 + A')
= AB + B
= (A + 1)B
= B

b) A + B' + C + (AB')'
= A + B' + C + A + (B')'
= A + B' + C + A + B
= A + C + 1
= 1

c) (B' + (AB)' + A + C)'
= (B' + A' + B' + A + C)'
= (B' + 1 + A + C)'

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= (1)'
= 0
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