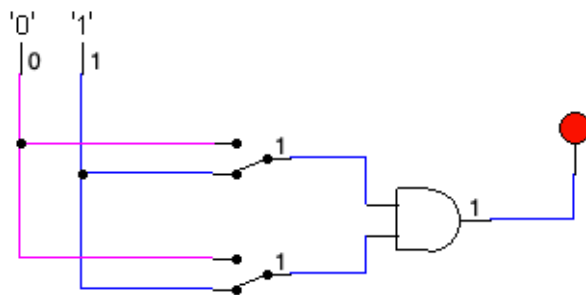


Instruction:

1. Draw the logic diagram of the following gates using logsim and complete the Truth tables.

a) AND

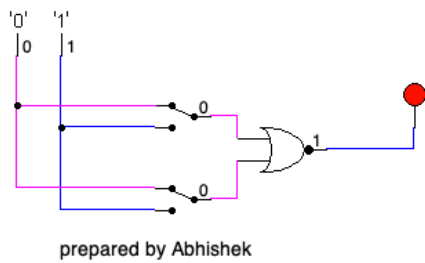
A	B	A.B
0	0	0
0	1	0
1	0	0
1	1	1



prepared by Abhishek

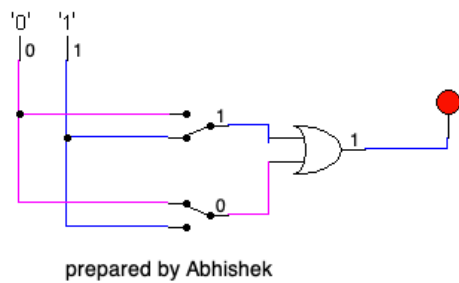
b. NOR

A	B	$\neg(A+B)$
0	0	1
0	1	0
1	0	0
1	1	0



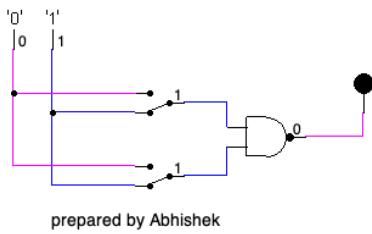
c. OR

A	B	$A+B$
0	0	0
0	1	1
1	0	1
1	1	1



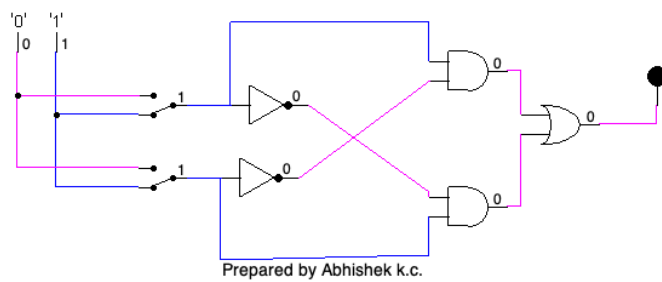
NAND (using NOT and AND)

A	B	$\neg(A.B)$
0	0	1
0	1	1
1	0	1
1	1	0



XOR using AOI

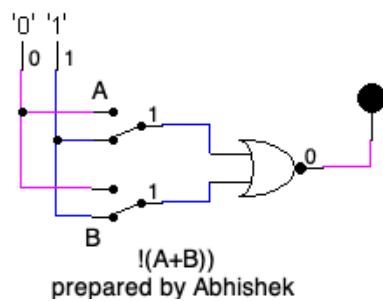
A	B	$A \oplus B$
0	0	0
0	1	1
1	0	1
1	1	0



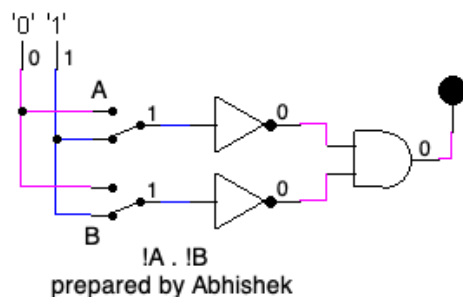
2. Use LogSim to build the equivalent circuit for the following Boolean equations.
Prove that the expressions are equivalent by computing truth table.

$$\neg(A+B) = \neg A \cdot \neg B$$

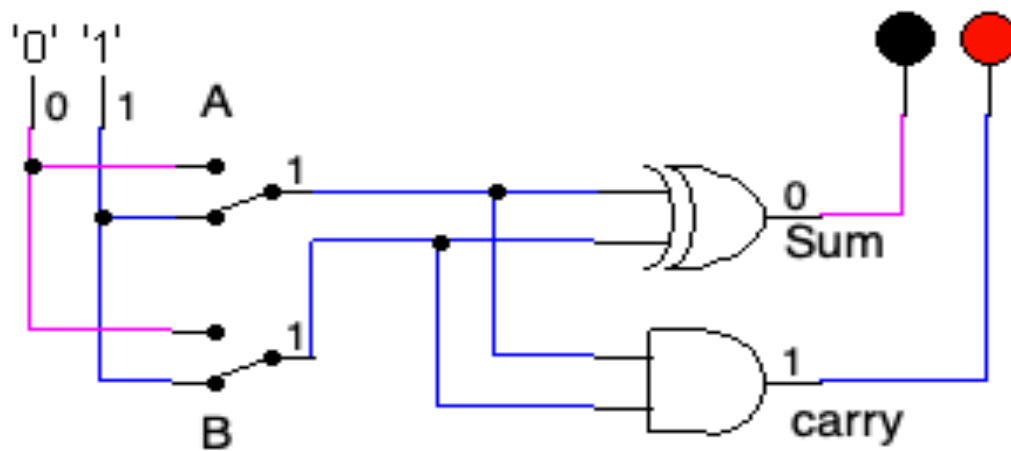
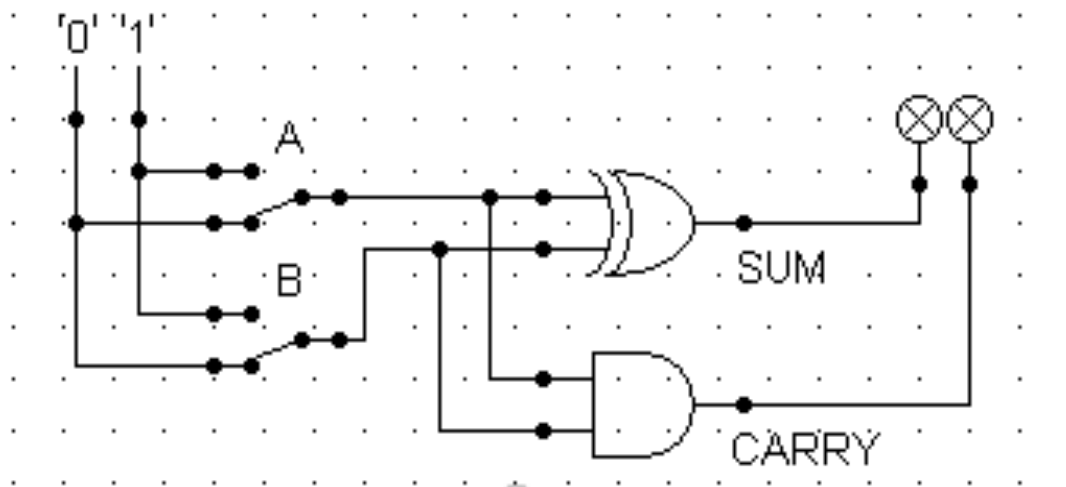
A	B	$\neg(A+B)$	$\neg A \cdot \neg B$
0	0	1	1
0	1	0	0
1	0	0	0
1	1	0	0



Equal to



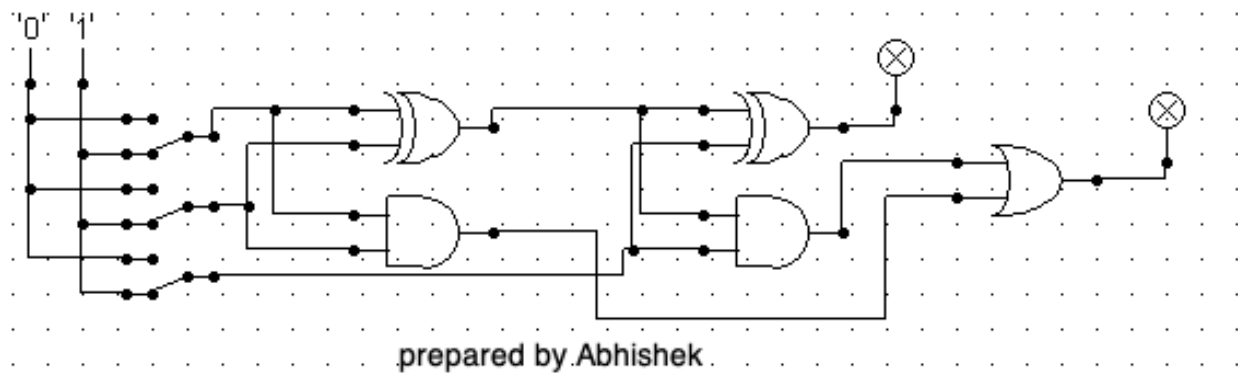
3. Draw the following circuit of half adder using Logsim.



prepared by Abhishek

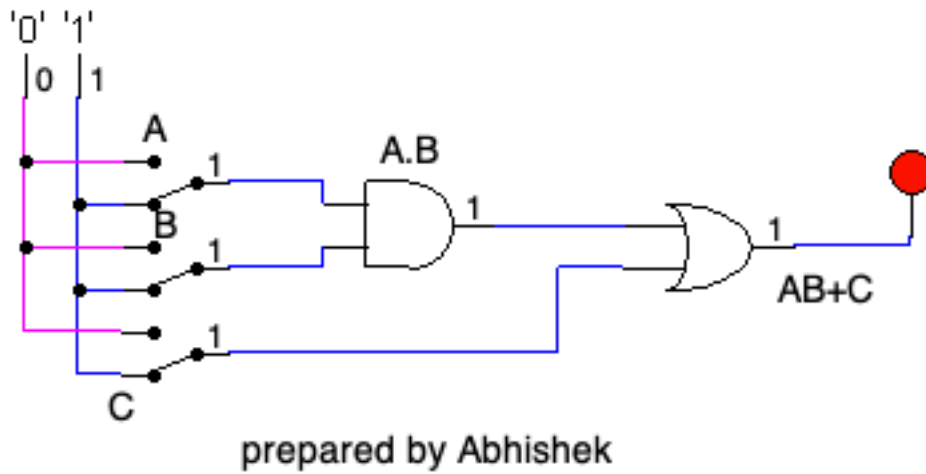
4. Draw full adder using Logsim and construct truth table.

Cin	A	B	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

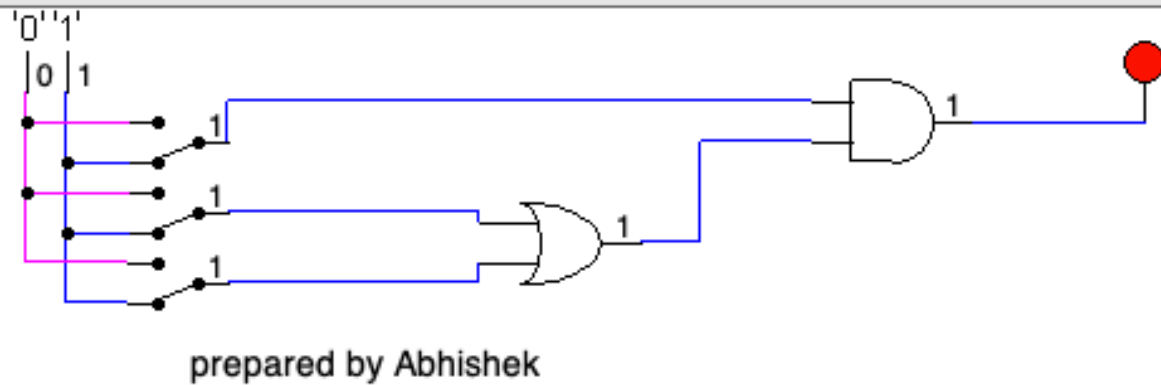


5. Draw the logic circuit for the following Boolean equations using logsim simulator.

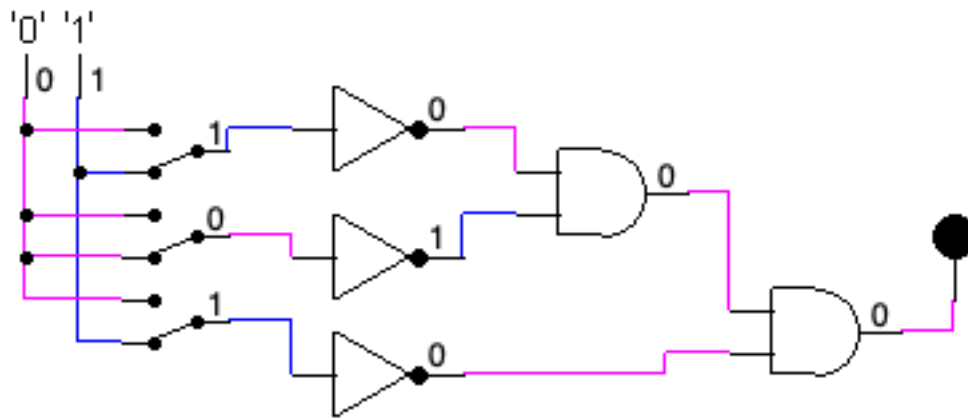
a. $AB+C$



b. $A(B+C)$



c. $X'Y'Z'$



Prepared by Abhishek k.c.