

A	B	C	D	$A+B+C$		$F=(A+B+C).D$
0	0	0	0	0	0	0
0	0	0	1	0	0	0
0	0	1	0	1	0	0
0	0	1	1	1	1	1
0	1	0	0	1	0	0
0	1	0	1	1	1	1
0	1	1	0	1	0	0
0	1	1	1	1	1	1
1	0	0	0	1	0	0
1	0	0	1	1	1	1
1	0	1	0	1	0	0
1	0	1	1	1	1	1
1	1	0	0	1	0	0
1	1	0	1	1	1	1
1	1	1	0	1	0	0
1	1	1	1	1	1	1

Table : Truth table

The boolean function is $F(A,B,C,D) = A'B'CD + A'BC'D + A'BCD + AB'C'D + AB'CD + ABC'D + ABCD$

We used 3 input XOR gate, NOT gate and AND gate designing the final circuit.