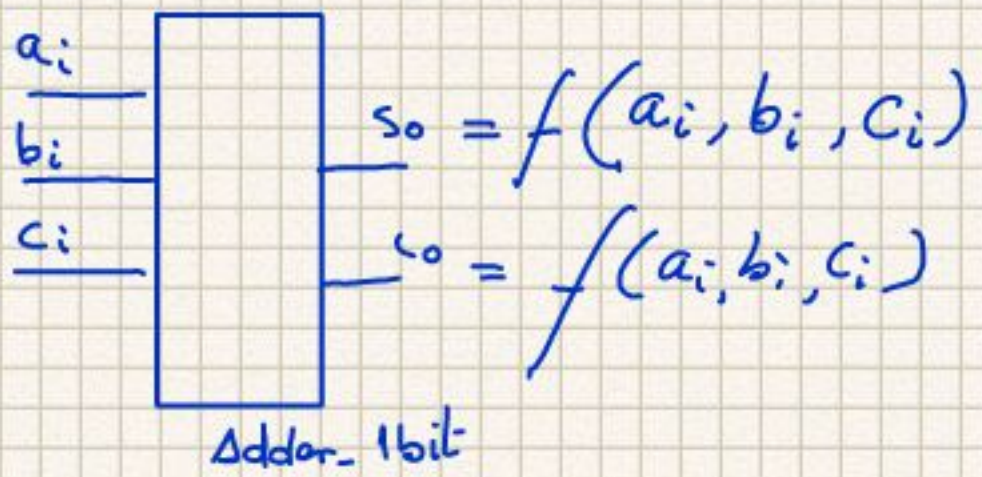


Planning a 1bit-adder using equations

a_i	b_i	c_i	c_o	s_o
0	0	0	0	0
0	0	1	0	1
0	1	0	0	1
0	1	1	1	0
1	0	0	0	1
1	0	1	1	0
1	1	0	1	0
1	1	1	1	1



- We can input the table in 'winilog.exe' to extract the SOP or POS
- Or simply we can try to simplify the table using algebra

$$C_o = a_i' b_i c_i + a_i b_i' c_i + a_i b_i c_i' + a_i b_i c_i$$

$$C_i (a_i' b_i + a_i b_i') + a_i b_i (c_i' + c_i)$$

$$a_i \oplus b_i$$

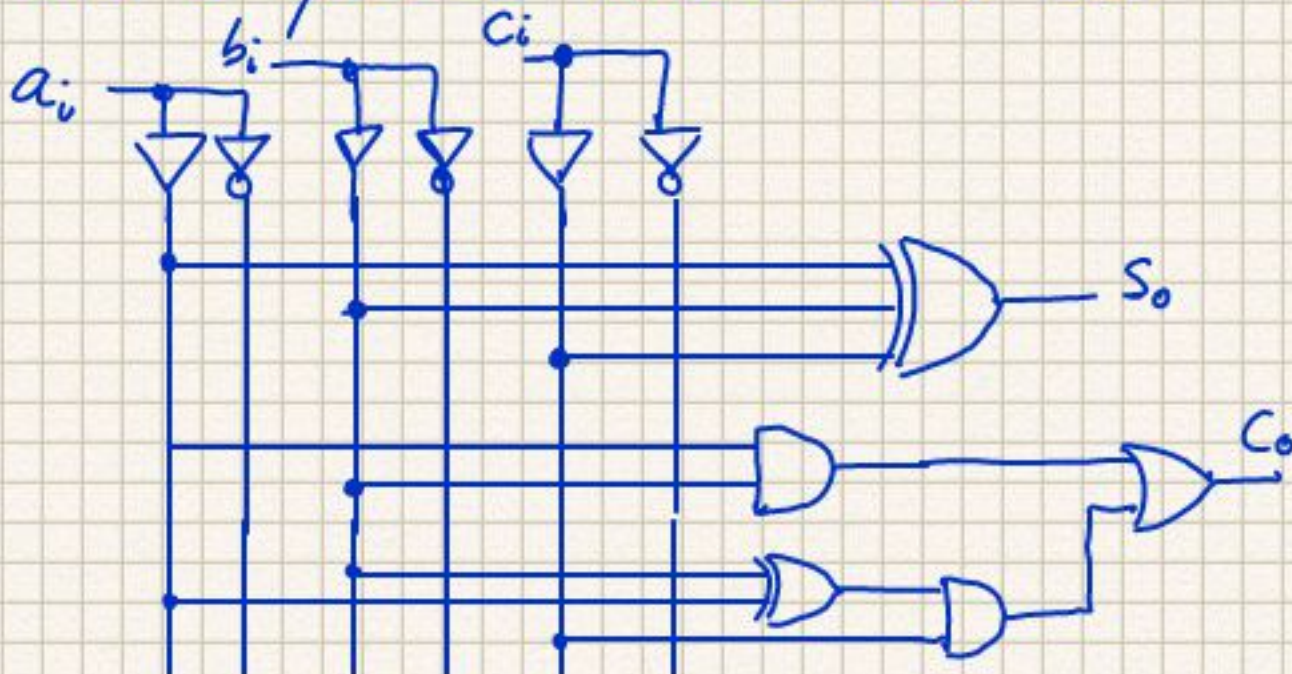
$$C_o = C_i (a_i \oplus b_i) + a_i b_i$$

This term is called carry propagator
This term is called carry generator

(See the carry look ahead theory)

$S_o = a_i \oplus b_i \oplus C_i$ because it's '1' when there is an even number of ones, and '0' when there is an odd number of ones

Thus a possible circuit can be:



The NOT are not used