

▷ full adder

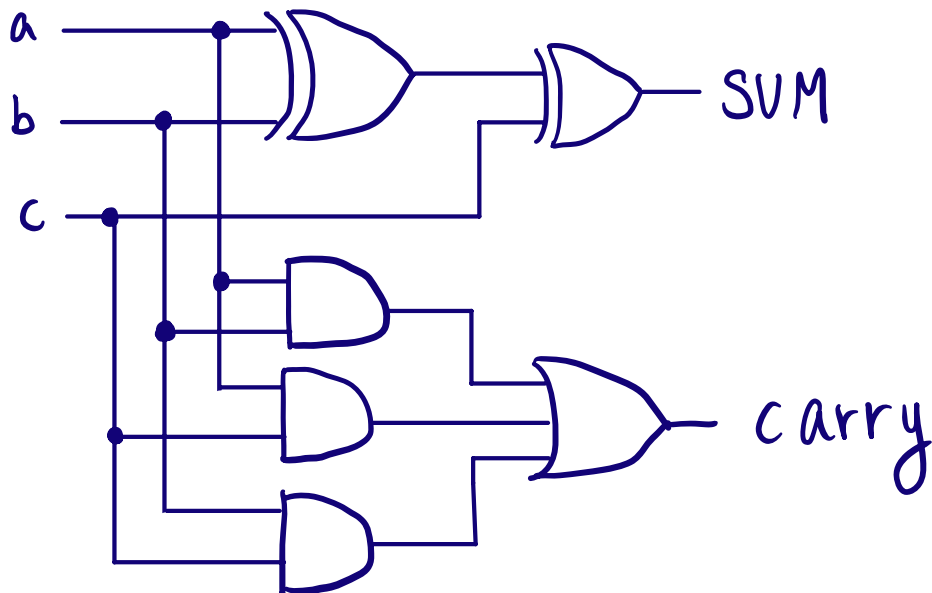
a \ bc	00	01	11	10
0	0	1	0	1
1	1	0	1	0

$$\text{SUM} = a \oplus b \oplus c$$

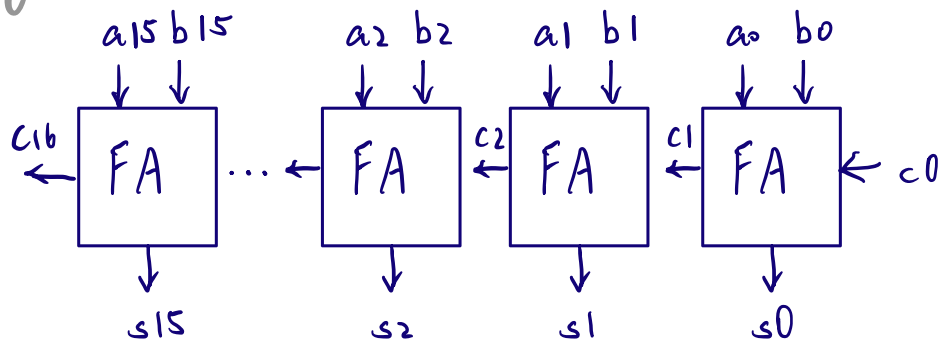
a \ bc	00	01	11	10
0			1	
1		1	1	1

$$\text{carry} = a \cdot c + a \cdot b + b \cdot c$$

a	b	c	SUM	carry
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



Add 16



▷ half adder

input		output	
A	B	sum	carry
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

A \ B	0	1
0	0	1
1	1	0

$$\begin{aligned} \text{SUM} &= \bar{A} \cdot B + A \cdot \bar{B} \\ &= \text{XOR} \end{aligned}$$

A \ B	0	1
0	0	0
1	0	1

$$\begin{aligned} \text{carry: } &A \cdot B \\ &= \text{AND} \end{aligned}$$

