

Sunday, 5 December 2021 4:47 PM

There are circuits inside ALU and perform additions.

- Those circuits that add two bits are "half adders".
- Those circuits that add three bits are "full adders".

- Those circuits that add three bits are "full adders".

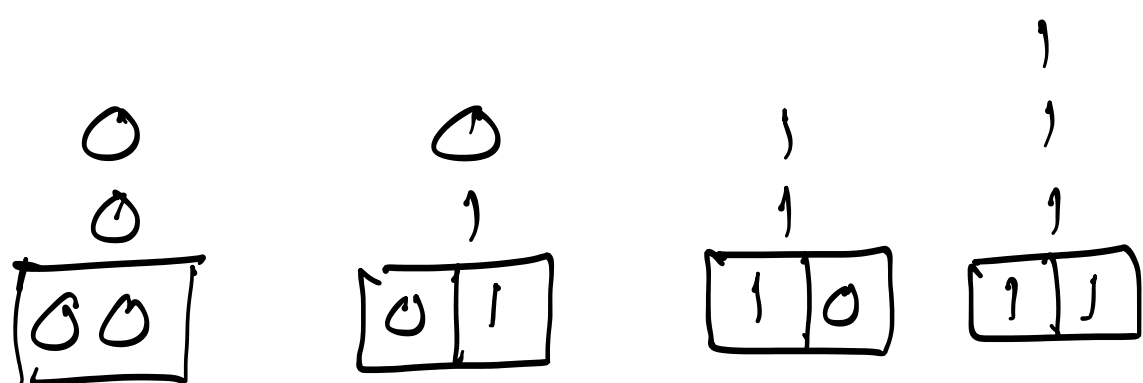
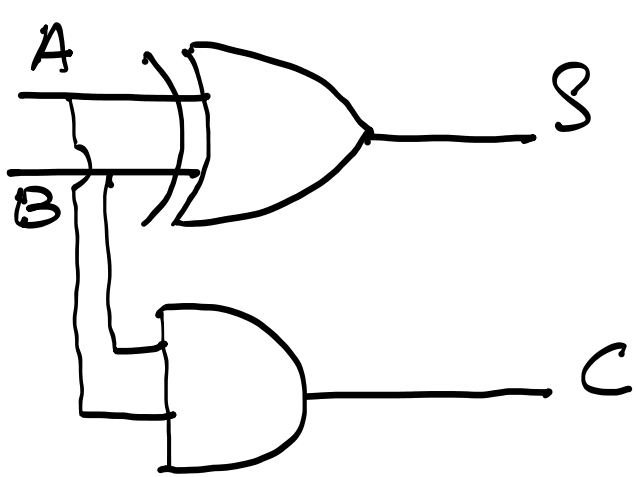
$$\begin{array}{r}
 +7 \\
 -3 \\
 \hline
 +4
 \end{array}$$

Bitwise operations:

 Full adder:

 Half adder:

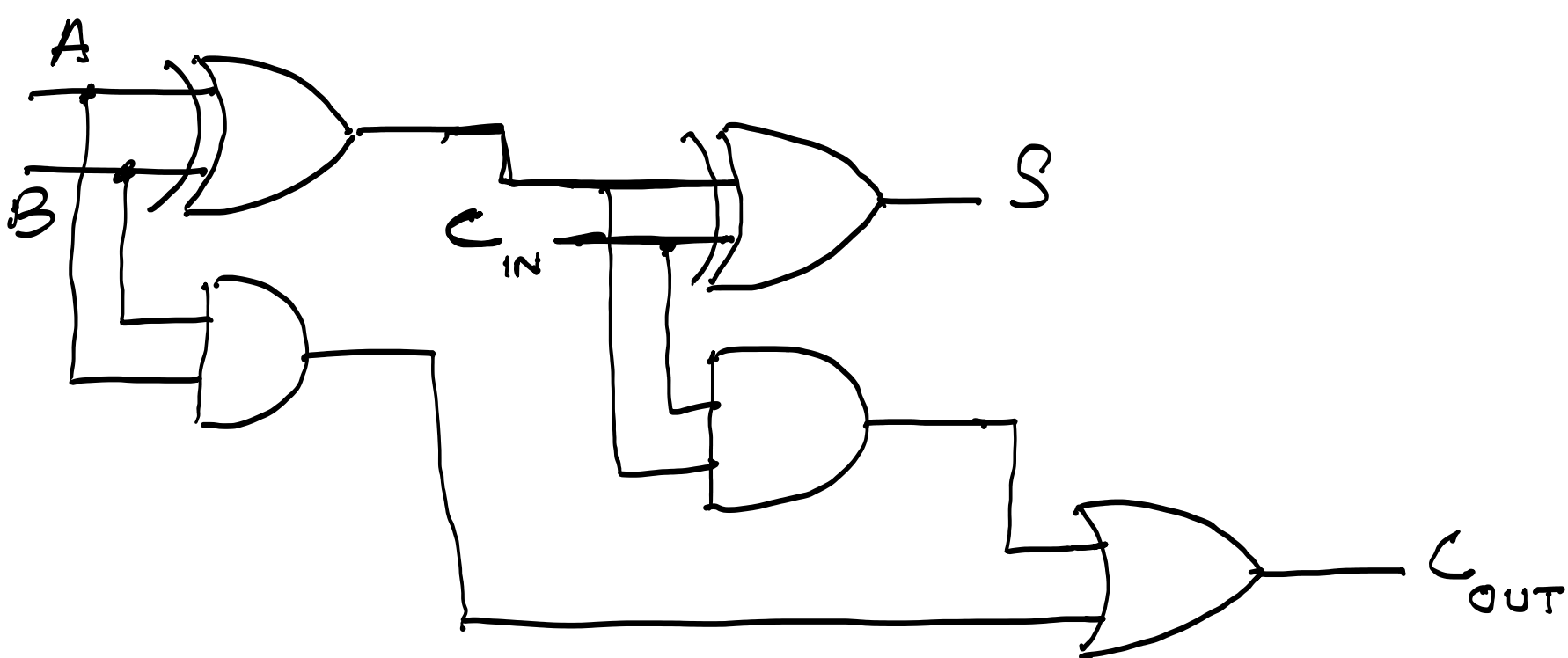
Half Address:



$2^2 = 4$ Möglichkeiten $\begin{matrix} \nearrow 0 \\ \searrow 3 \end{matrix}$

$\begin{matrix} & & & 2 & & 1 \\ & & & \downarrow & & \downarrow \\ A & B & \begin{array}{|c|c|} \hline L & S \\ \hline \end{array} \\ \hline 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 \\ 1 & 1 & 1 & 0 \end{matrix}$

Full Adder:


$$2^3 = 8 \begin{matrix} / & 0 \\ / & 7 \end{matrix}$$

A	B	C _{IN}	C _{OUT}	S
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

$$\begin{array}{r} +7 \\ +3 \\ \hline +10 \end{array}$$

○ 1 1 1 ← A
 ○ 0 1 1 ← B
 1 0 1 0 ✓

Full Adder 4 bits working

