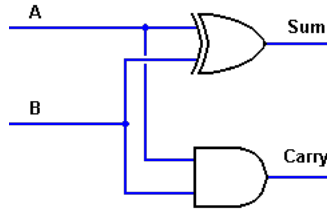


Half Adders and Full Adders

Half adders and full adders are used to add binary digits. The half adder adds two binary digits; the full adder adds two binary digits and a third (a “carry”).

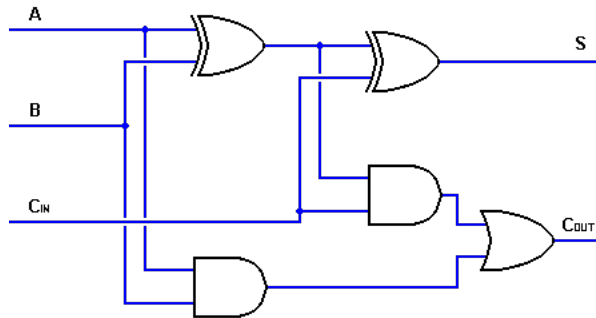
1 Half Adder



A and B are the input bits. Sum is the one-bit sum, and $Carry$ the carry. The following table shows what the values are:

A	B	Sum	$Carry$
0	0	0	0
0	1	1	0
1	0	1	0
1	1	0	1

2 Full Adder



A and B are the input bits, and C_{IN} is the carry bit from a previous addition. S is the one-bit sum, and C_{OUT} the carry resulting from the addition. C_{OUT} is the C_{in} for the next full adder. The following table shows what the values are:

A	B	C_{IN}	S	C_{OUT}
0	0	0	0	0
0	1	0	1	0
1	0	0	1	0
1	1	0	0	1
0	0	1	1	0
0	1	1	0	1
1	0	1	0	1
1	1	1	1	1

3 Sources

Half-adder and full adder images from <http://www.play-hookey.com/digital/adder.html>, with slight modification.