

Building Circuits with only NAND or NOR

We already know that any combinatorial function (one whose outputs depend only on its inputs) can be made from AND, OR, and NOT wired together.

However, we know from DeMorgan that we can actually use just OR and NOT or AND and NOT.

NAND only

Using DeMorgan's Law: $A+B = \overline{\bar{A} \cdot \bar{B}}$

As well as $A+B$, can we get \bar{A} only in terms of NAND?

A	B	$\bar{A} \cdot \bar{B}$	
0	0	1	*
0	1	1	*
1	0	1	*
1	1	0	* *

Notice that when the two inputs are the same, the output is the inverse of the input.
So if we connect one input to both inputs, we have an effective NOT.



Also note that when 1 input is a 1, the output is the inverse of the other input.

