Now that we are familiar with the individual logic gates and their truth conditions we are in a position to create **logic circuits**. These are combinations of logic gates controlled by inputs that can provide a range of useful outputs.

Basic example

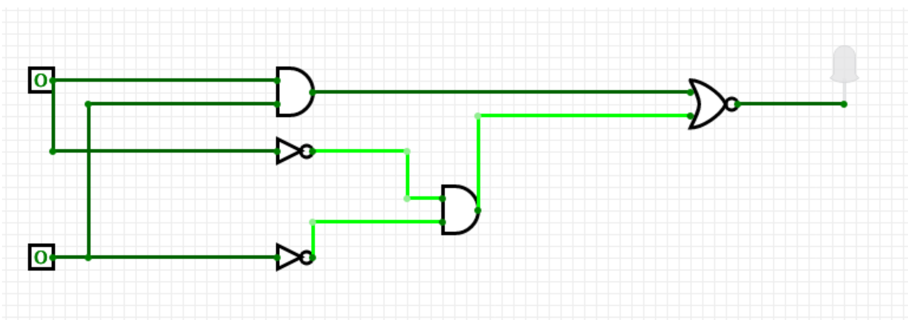
In the below circuit we have the following gates connected to two inputs with one output, moving through the following stages:

1. `AND`, `NOT` , `NOT`
2. `AND`, `NOR`

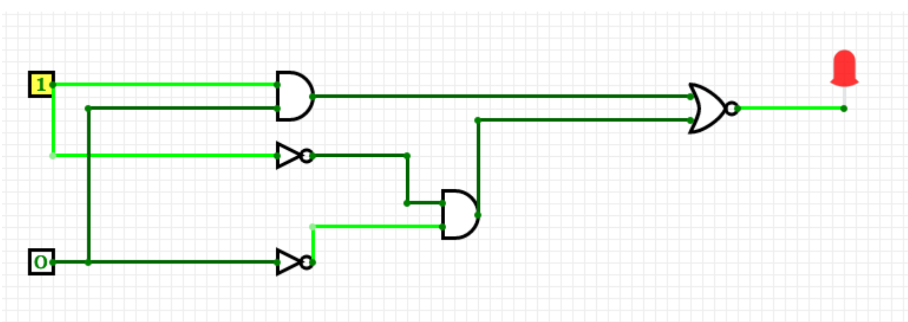
This is equivalent to the following truth table:

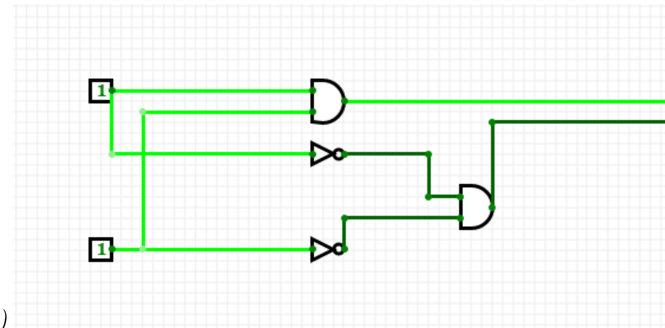
```
A     B    Output
-     -    -----

0     0      0         (1)
1     0      1         (2)
0     1      1         (3)
1     1      0         (4)
```



Line 1 of the truth table





Line 2 and 3 of the truth table (equivalent to each other)
Line 4 of the truth table

Applied example

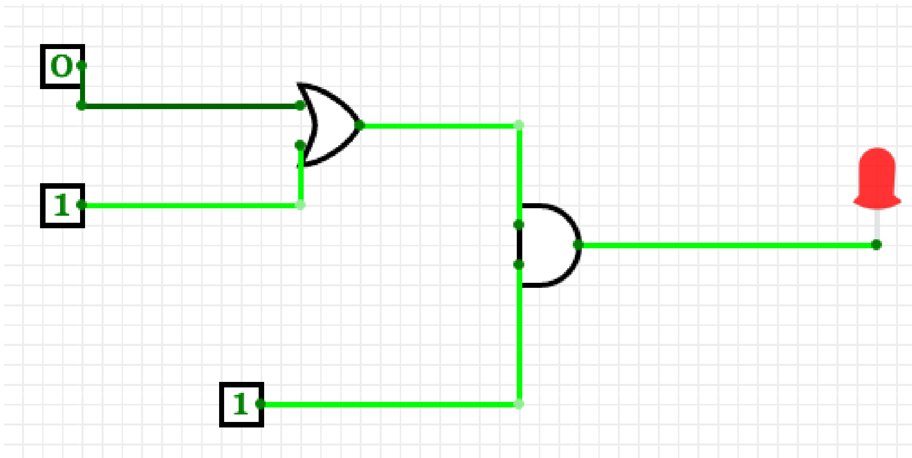
With this circuit we have a more interesting applied example.

It corresponds to an automatic sliding door and has the following states

- a proximity sensor that opens the doors when someone approached from outside
- a proximity sensor that opens the doors when someone approaches from the inside
- a manual override that locks both approaches (inside and out) meaning no one can enter of leave

Here's a visual representation:! logic_circuits_5.gif The following truth table represents this behaviour, with A and B as the door states, C as the override and X as the door action (0 = open, 1 = closed)

A	B	C	X
0	0	0	0
1	0	0	0
0	1	0	0
1	1	0	0
0	0	1	0
1	0	1	1
0	1	1	1
1	1	1	1



Automatic door sensor with manual override