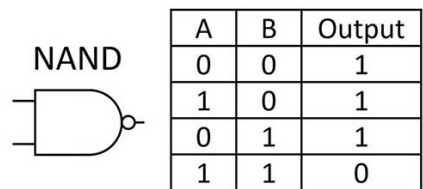
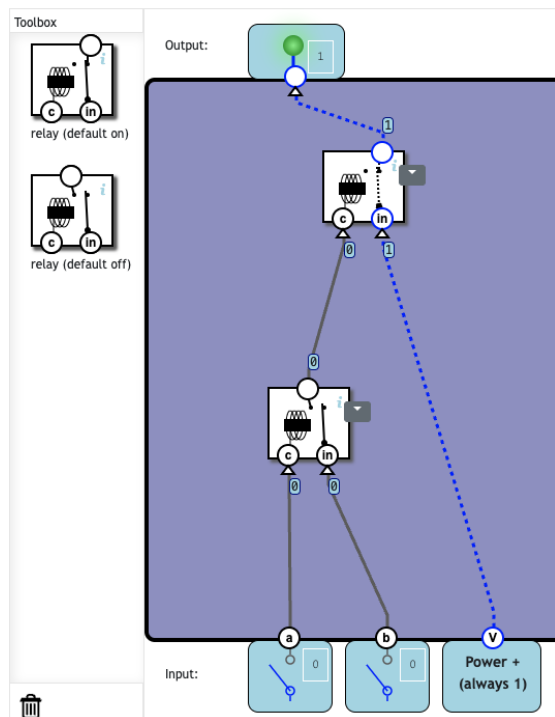


1. Nand gate / Transistor –

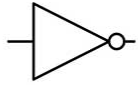


- Constant power through a default on gate so everything returns 1
- Except when both inputs are 1, achieved by running both inputs through a default off gate, so that when both the power input and the magnet are turned on, the gate sends power to the magnet in the constantly powered default on gate and returns 0



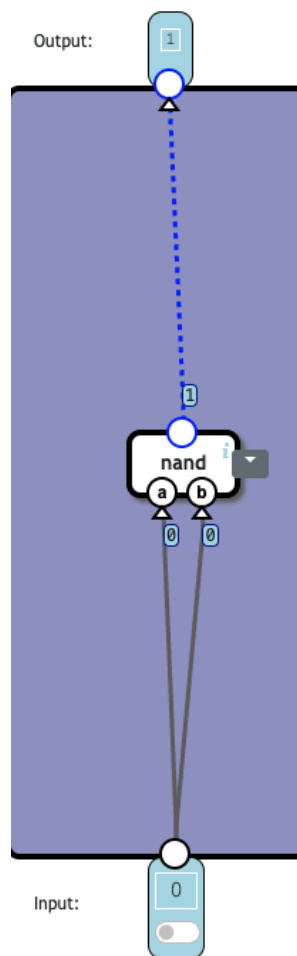
2. Invert (inv)

Inverter




Input	Output
0	1
1	0

- Run the input into both inputs of the NAND gate so that a constant 1 is achieved unless input is 1, then it runs 1 through both inputs of NAND and returns 0



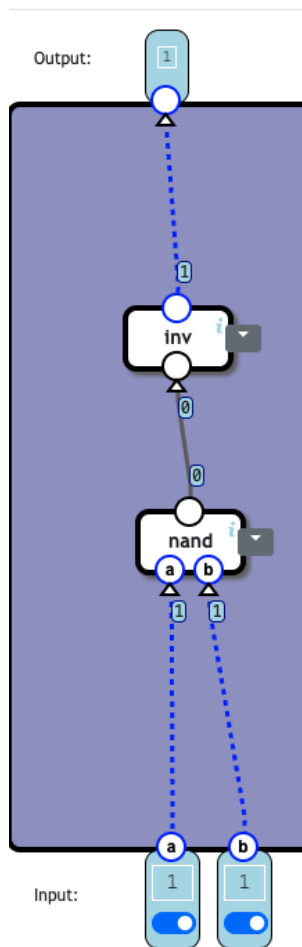
3. AND

AND

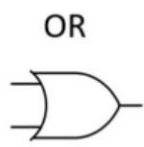


A	B	Output
0	0	0
1	0	0
0	1	0
1	1	1

- Invert output of NAND, only returns 1 when inputs a AND b send 1

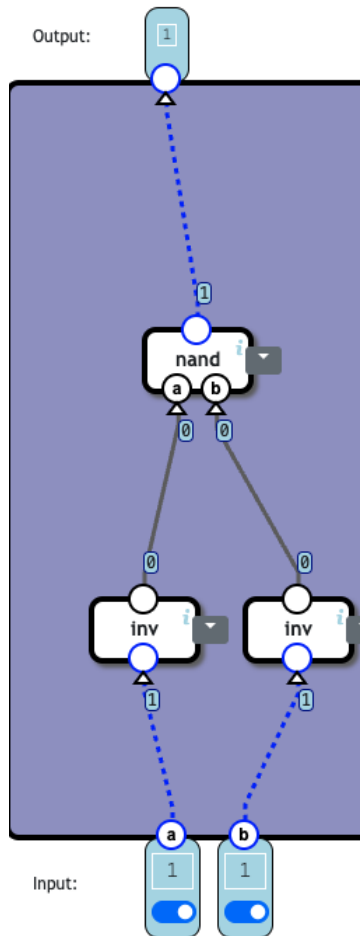


4. OR

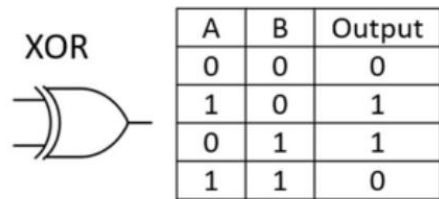


A	B	Output
0	0	0
1	0	1
0	1	1
1	1	1

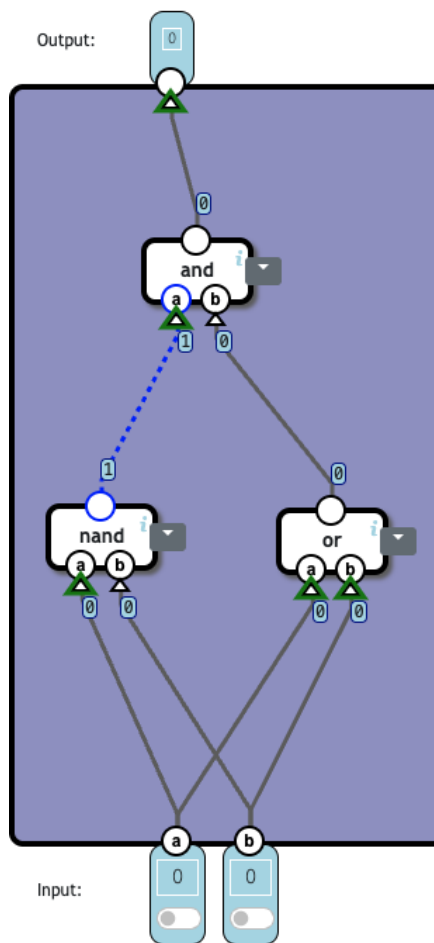
- Invert both inputs to NAND



5. XOR



- Send both inputs through NAND and OR, run these two outputs through AND, showing that OR must be true and AND must not.



(less NAND gate solution to use the fewest amount of transistors – 4 vs 6 NAND gates)

