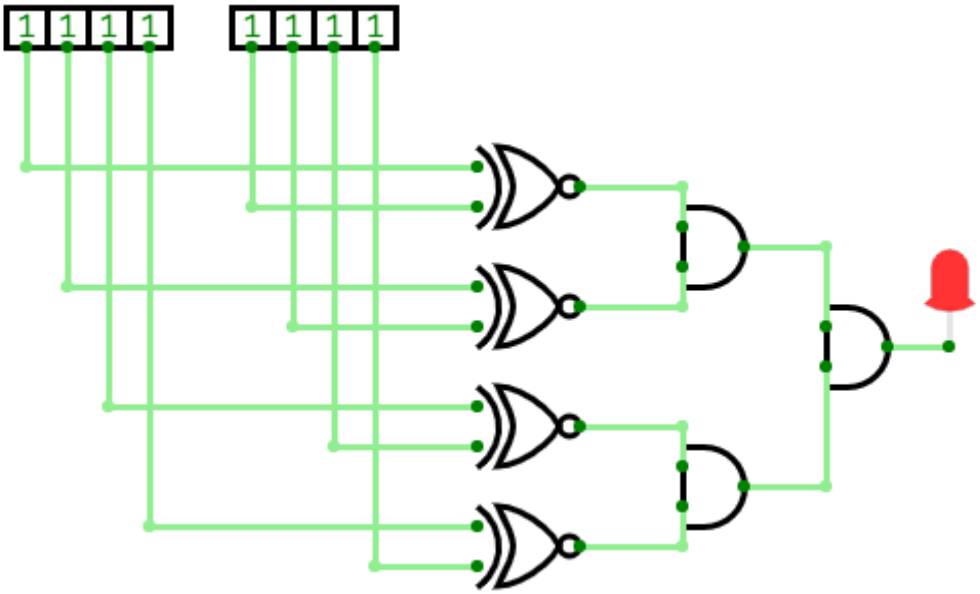
Part 1. The 4-bit Equality Comparator Circuit



Part 2: Part 2. A More General Comparator:

1-Bit Comparator:

A > B:

A	B	F
0	0	0
0	1	0
1	0	1
1	1	0

F true when: F = A * ¬B

A = B:

A	B	F
0	0	1
0	1	0
1	0	0
1	1	1

F true when: F = ¬A*¬B = **(A+B)**
and true when: F = A*B = **¬(A+B)**

XOR

A	B	F
0	0	0
0	1	1
1	0	1
1	1	0

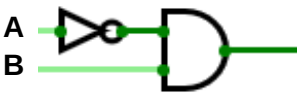
XNOR (Complement XOR)

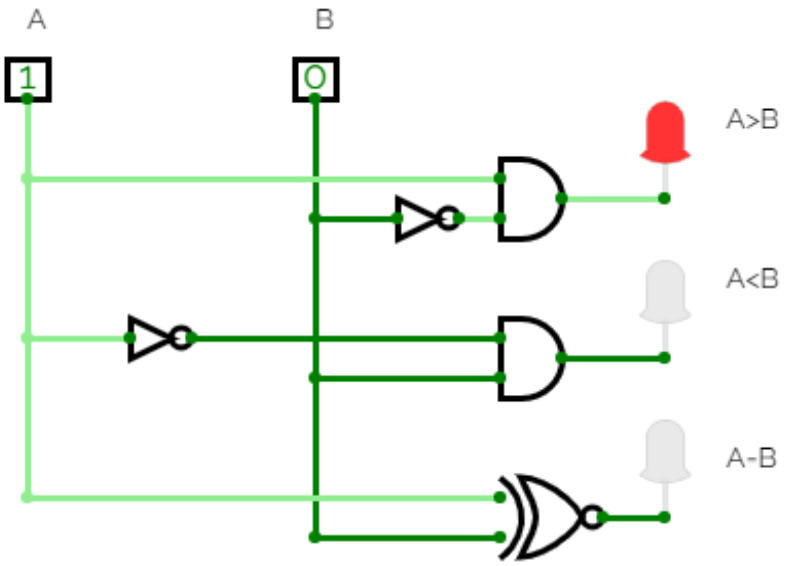
A	B	F
0	0	1
0	1	0
1	0	0
1	1	1

A < B:

A	B	F
0	0	0
0	1	1
1	0	0
1	1	0

F true when: F = A * ¬B





Part 3: 1-Bit comparator only using NAND-gate: