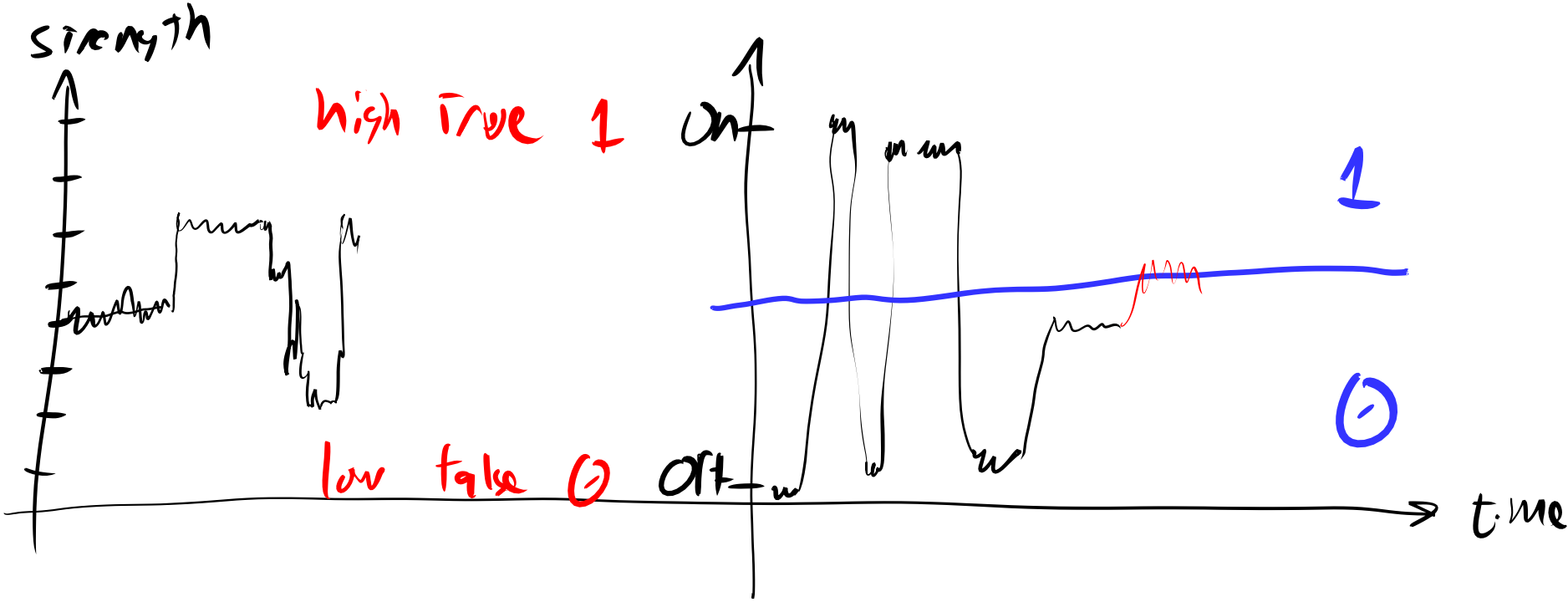
0 1

bit

Claude Shannon



binary

trinary

quadrinary

⋮

decimal

George Boole

True

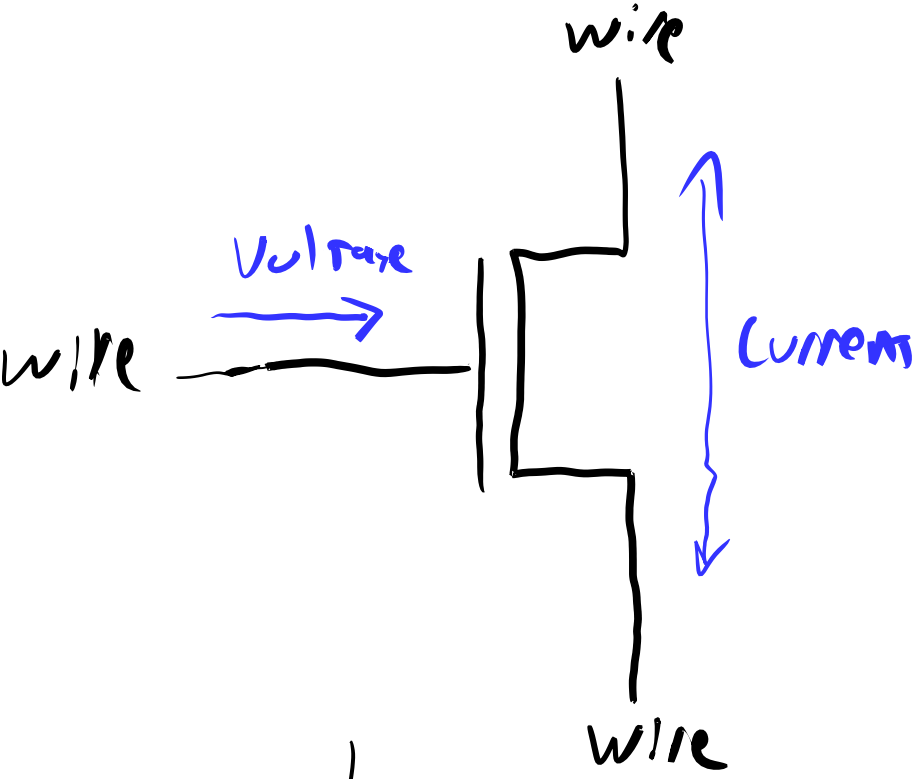
False

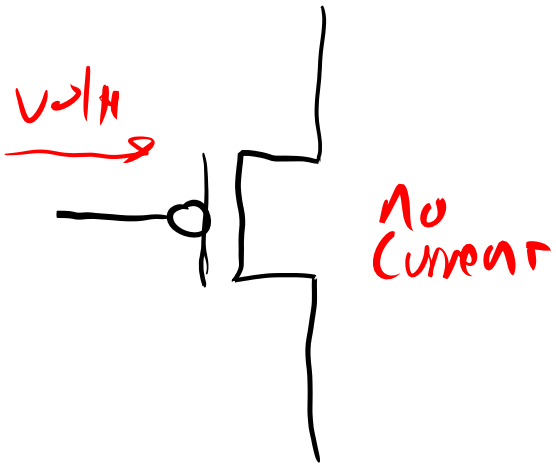
Boulean

and or nor

&& || !

Transistor



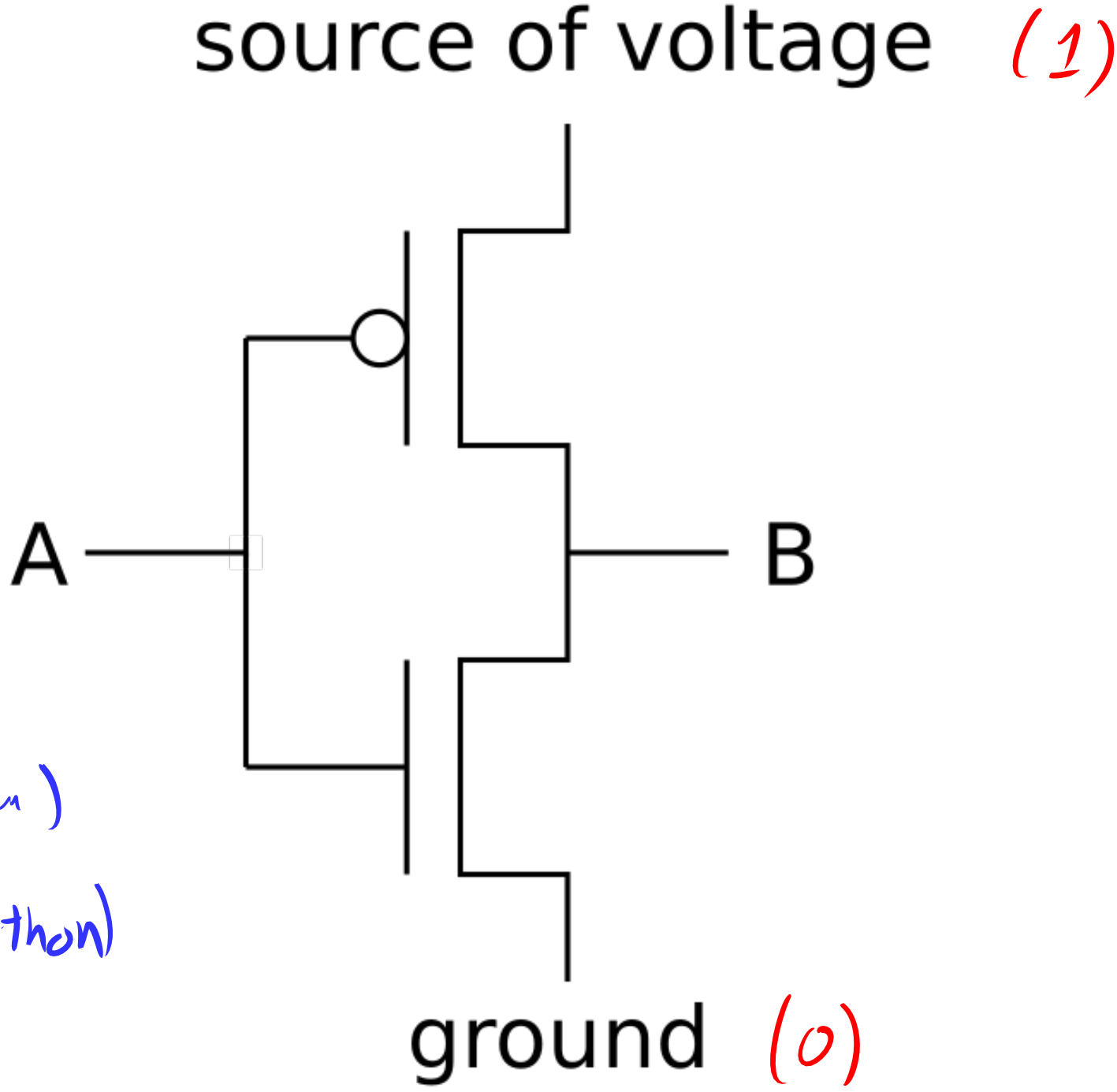


Silicon

Voltage - Pressure

Current - flow

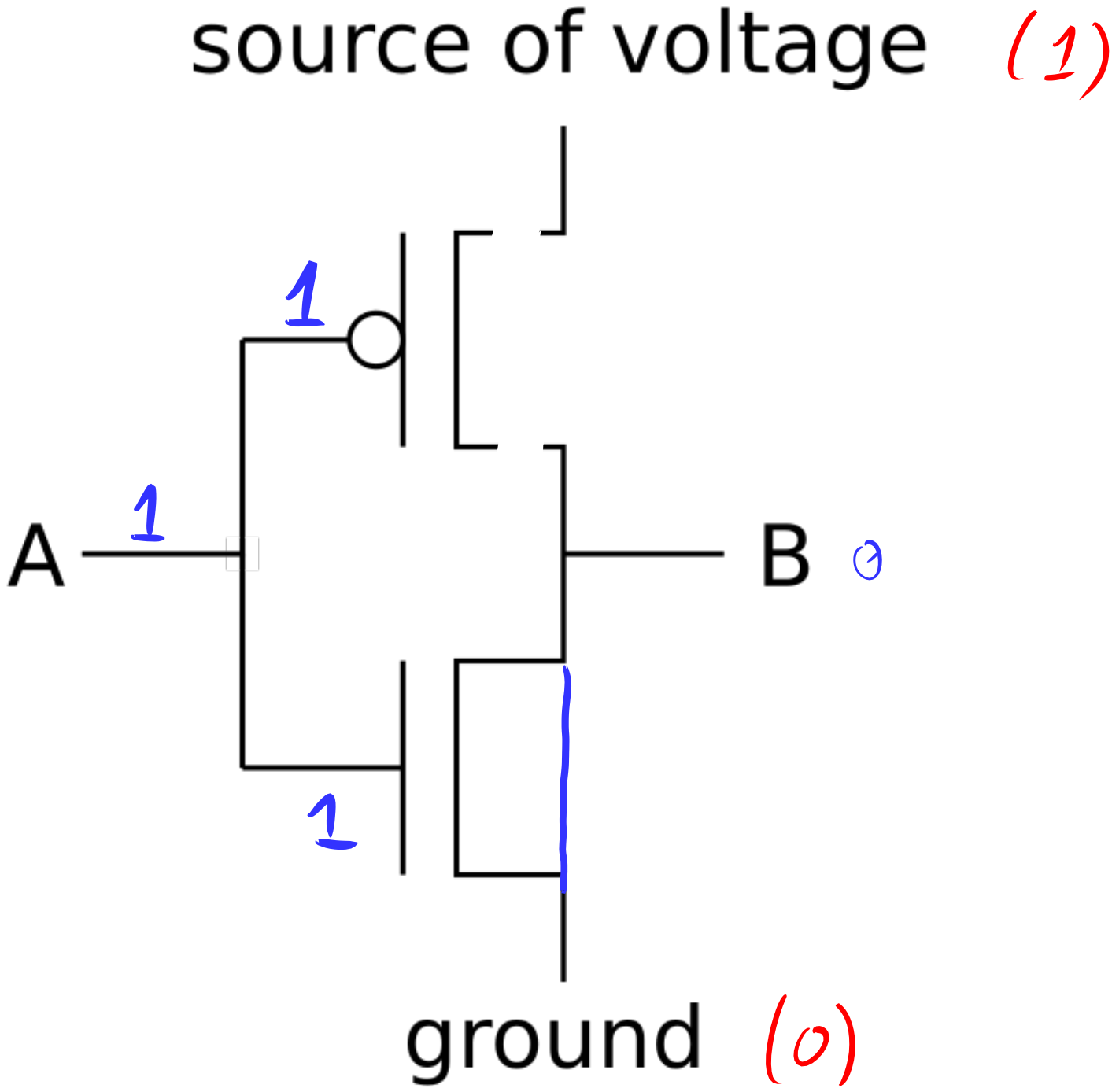
A	B
0	1
1	0



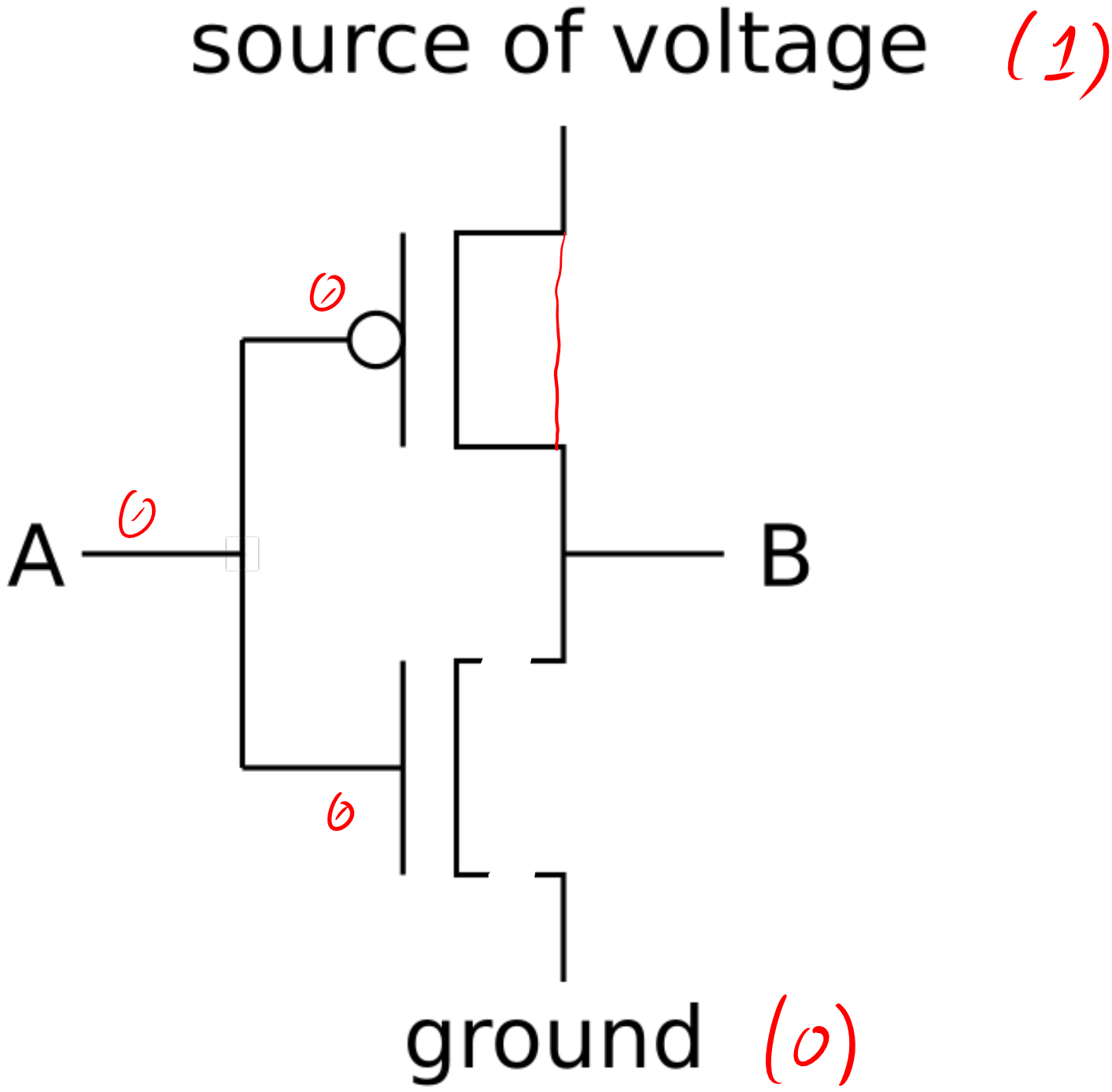
B = ! A (Java)

B = not A (Python)

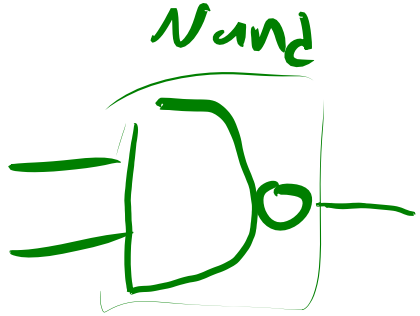
A	B
0	
1	0

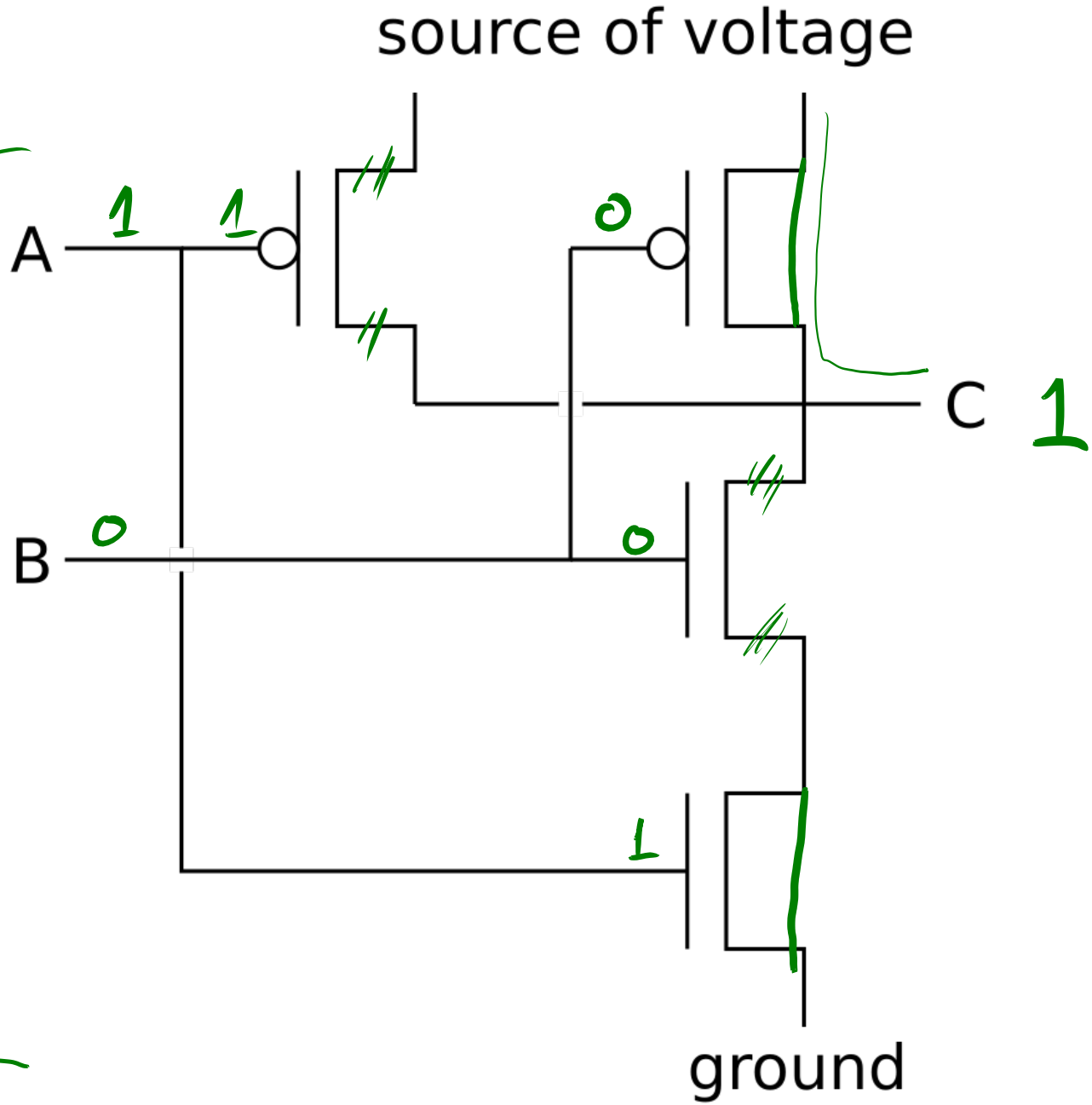


A	B
0	1
1	



A	B	C	A ⊼ B
0	0	1	1
0	1	1	1
1	0	1	0
1	1	0	1



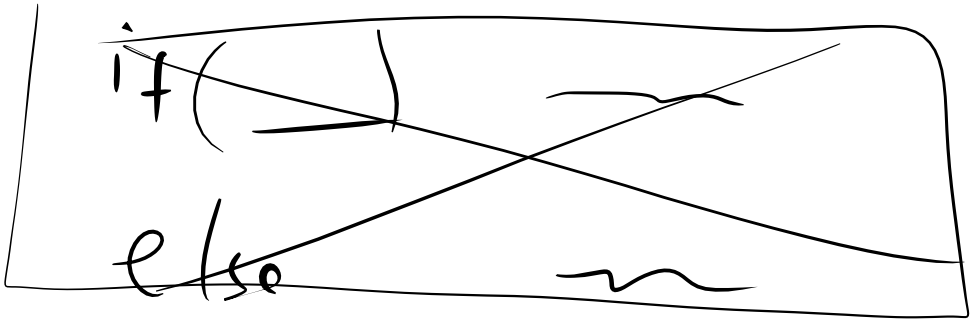


0 and

1 or

not

Ternary operator



a	b	c	a ? b : c
0			c
1			b

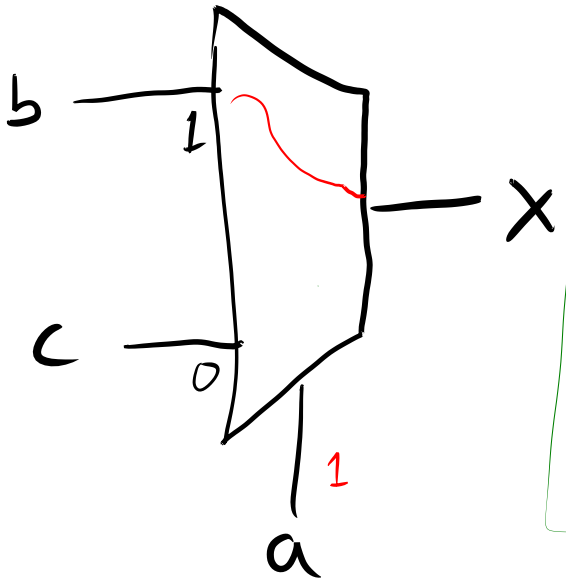
x = b if a else c

x = a ? b : c

x = a ? b : c

a	b	c	x
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	0
1	1	0	1
1	1	1	1

Multiplexer
MUX



x = (!a & !b & c) |
(!a & b & c) |
(a & b & !c) |
(a & b & c)