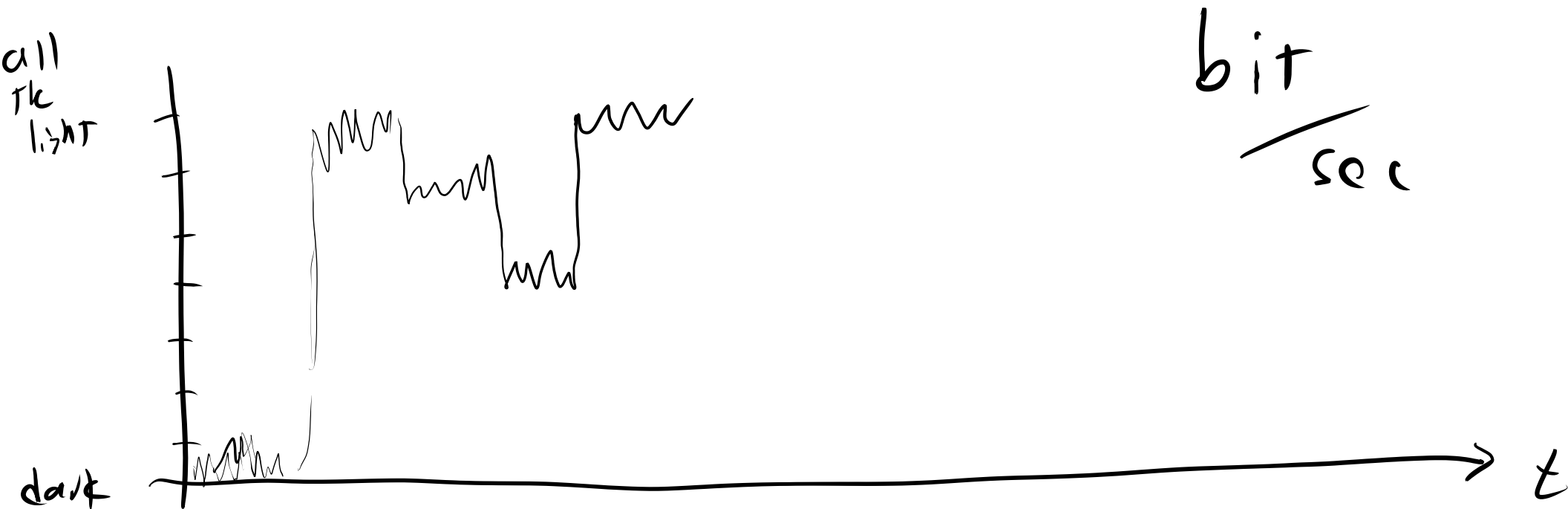


Claude Shannon

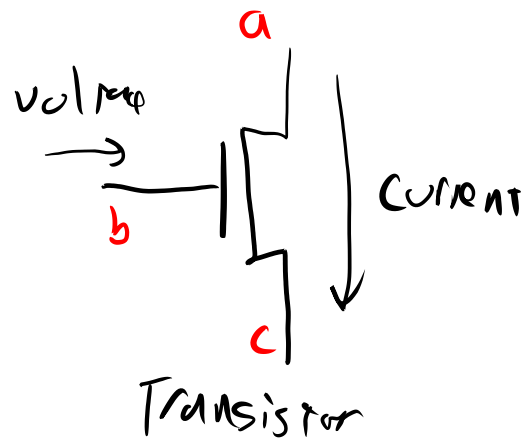
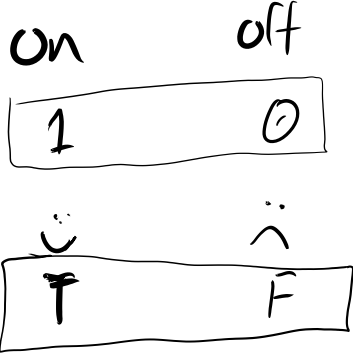


binary

2

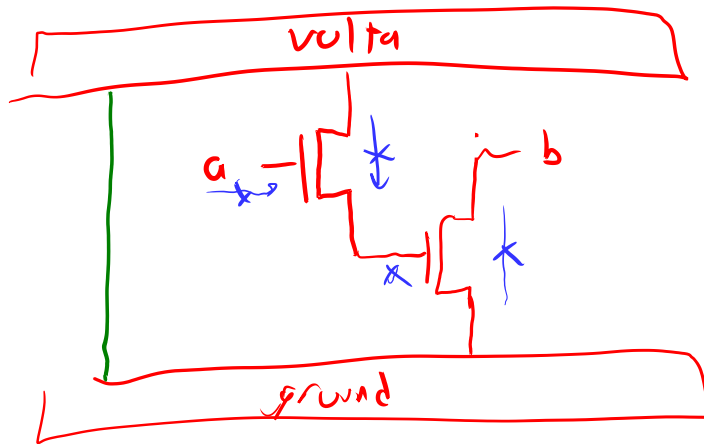
ternary

quaternary

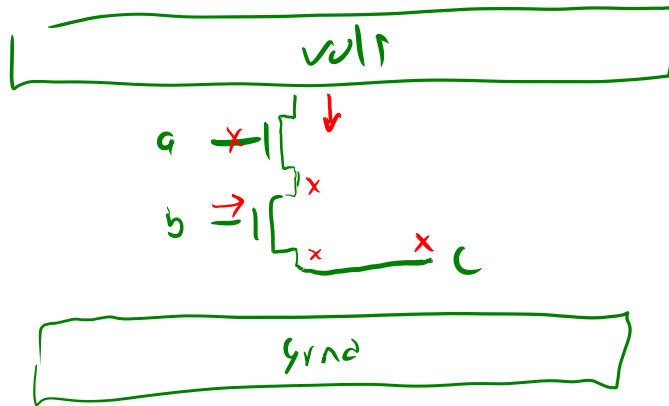


Voltage pressure
 Current flux, flow, current

if (b) {
 c = a
 }



a	b
voltage	not
not	not (weak)



a	b	c
V	V	V
V	N	N
N	N	N
N	V	N

and gate

Gates

&&

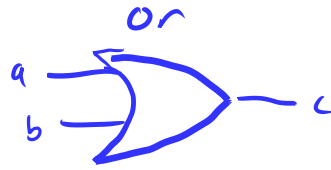
and

||

or



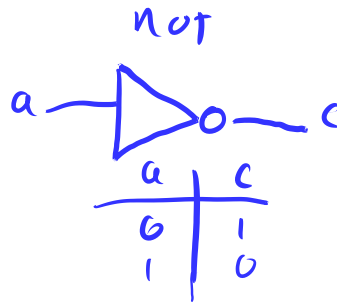
	a	b	c
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1



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

!

not



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

^



$$c = \neg(a \& b)$$

not(a and b)



$$(a \text{ or } b) \text{ and not } (a \text{ and } b)$$

!=

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

George

Boole

Boolean

T

F

and

or

not



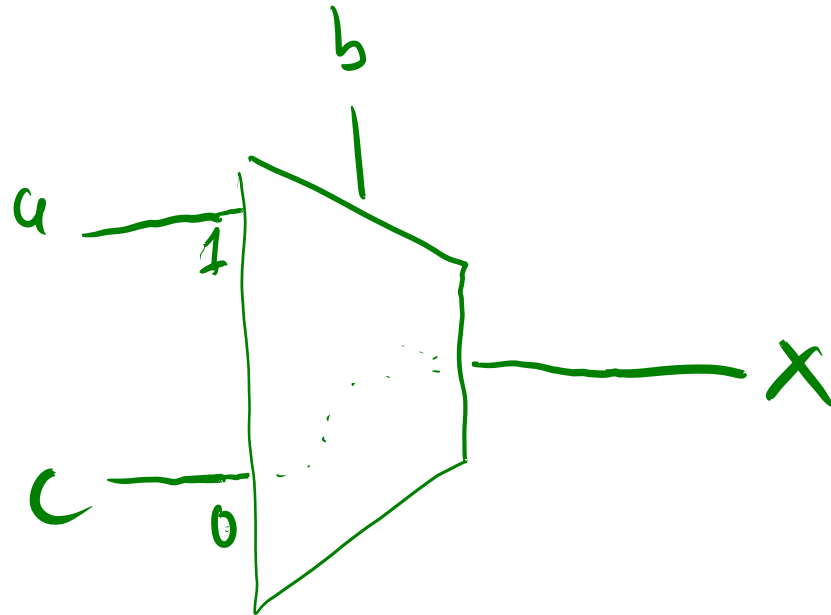
Python

$x = a$ if b else c

Java

$x = b ? a : c$

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



$(!a \& !b \& c) \mid (a \& !b \& c) \mid$
 $(a \& b \& !c) \mid (a \& b \& c)$

x 2-bit

