

Comments on 7bit Half Adder program

Tue 18 Oct 2018

All C prog. Starts at main section

C is a typed language

↳ We have $\neq$ "types" of objects/variables

Example: Integers, characters, bool,
Strings, floats, long, unsigned

int (assume 8 bits)
(it's not: Nowadays
usually 1 int = 4 Bytes)

$$a = 1 \Rightarrow 0010 \quad 0011$$

$$b = 0 \Rightarrow 0000 \quad 0010$$

$$a \wedge b \Rightarrow 0110 \quad 1101$$

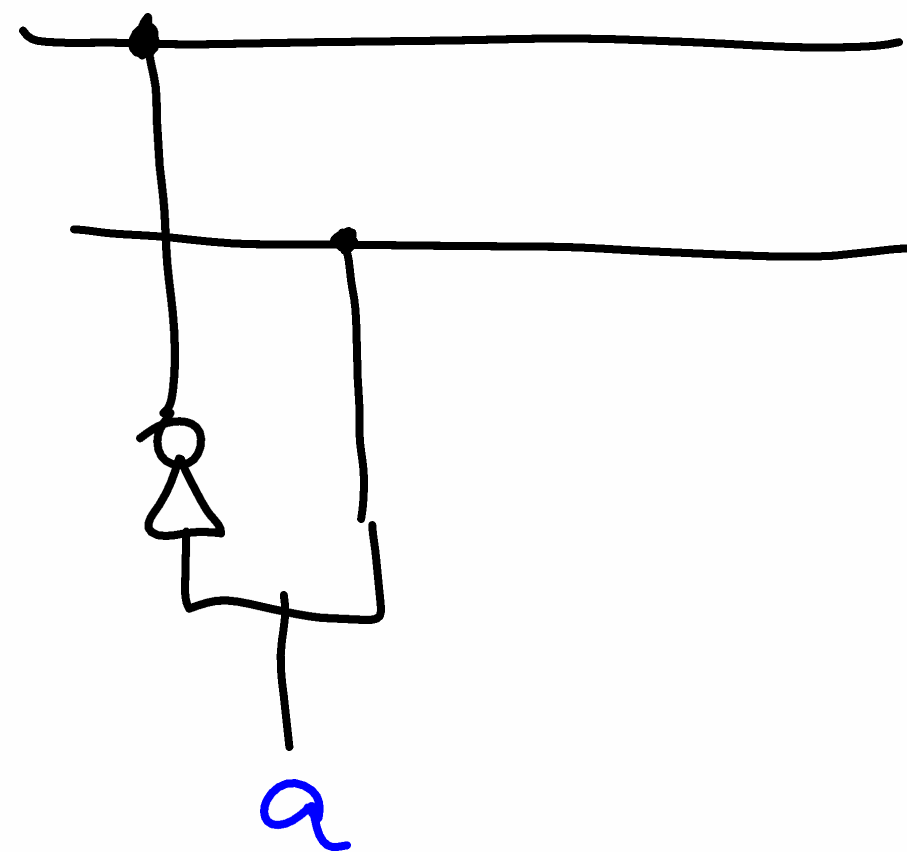
$$a \& b \Rightarrow 0000 \quad 0010$$

Binary Decoder

How does a Computer Count?

How does it know $b1011 = 1d 11$

1-bit Decoder



When will these lines be 1

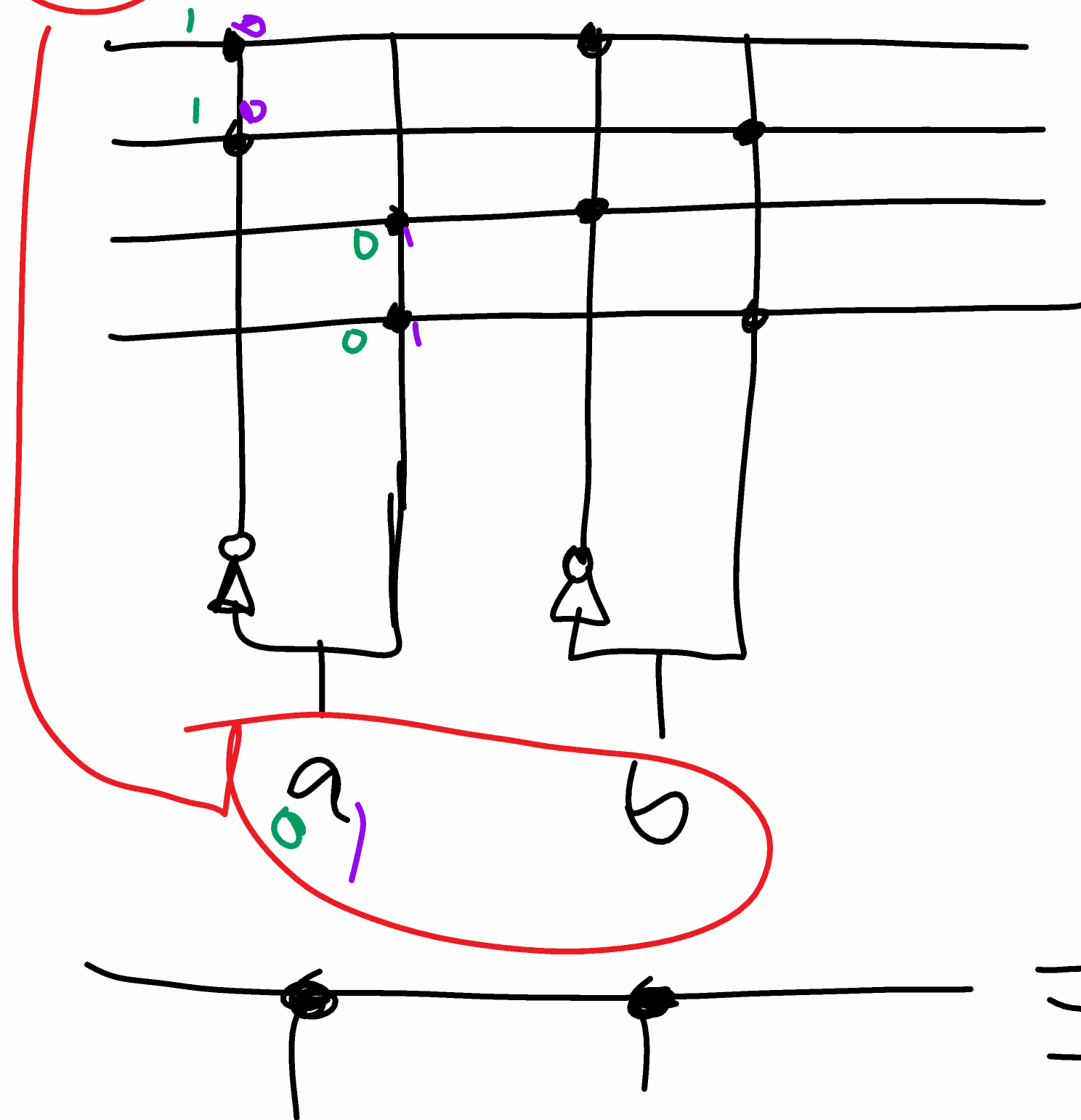
$\neg a$

$a = 0$

a

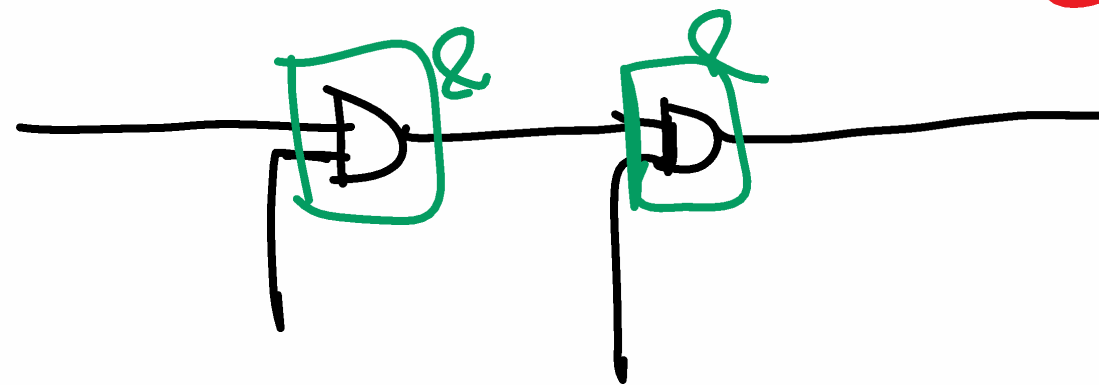
$a = 1$

2-bit Binary Decoder

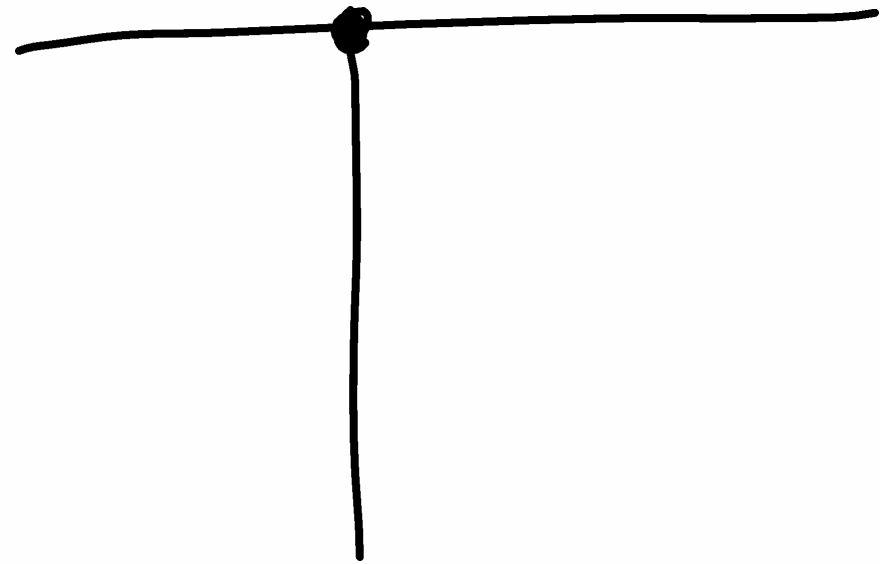


When one line is 1? a b
a and b = 0 0
a and b = 0 1
a and b = 1 0
a and a = 1 1

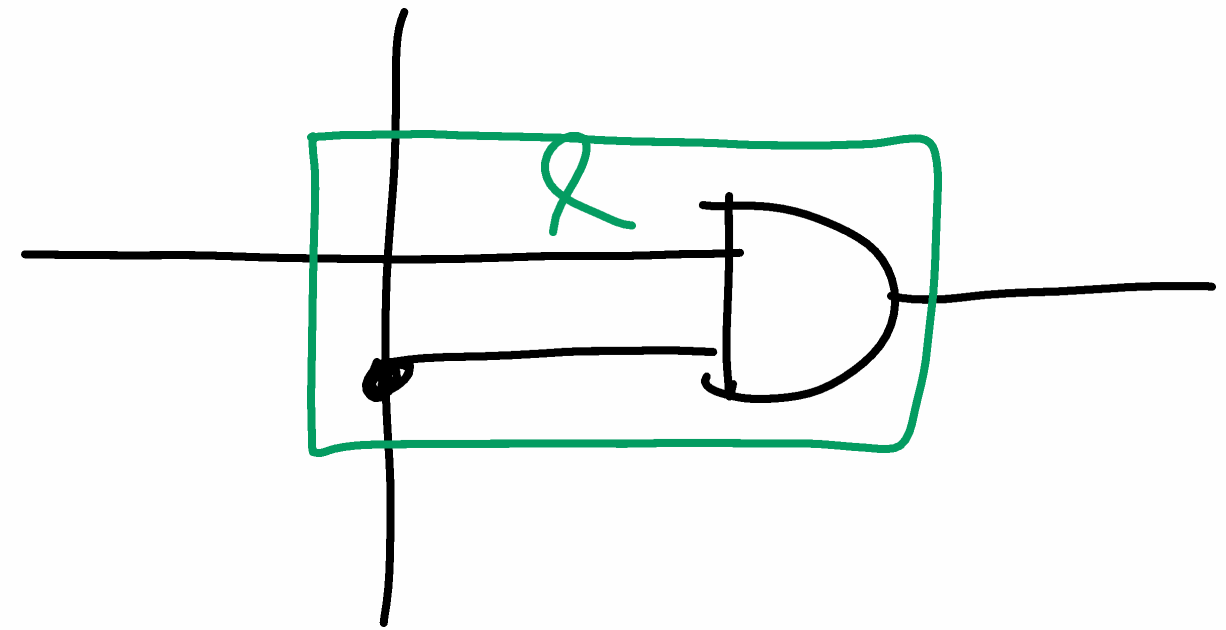
Exercise:
Build a 3-bit Binary
Decoder in C



Imagine that we change horizontal lines
side that



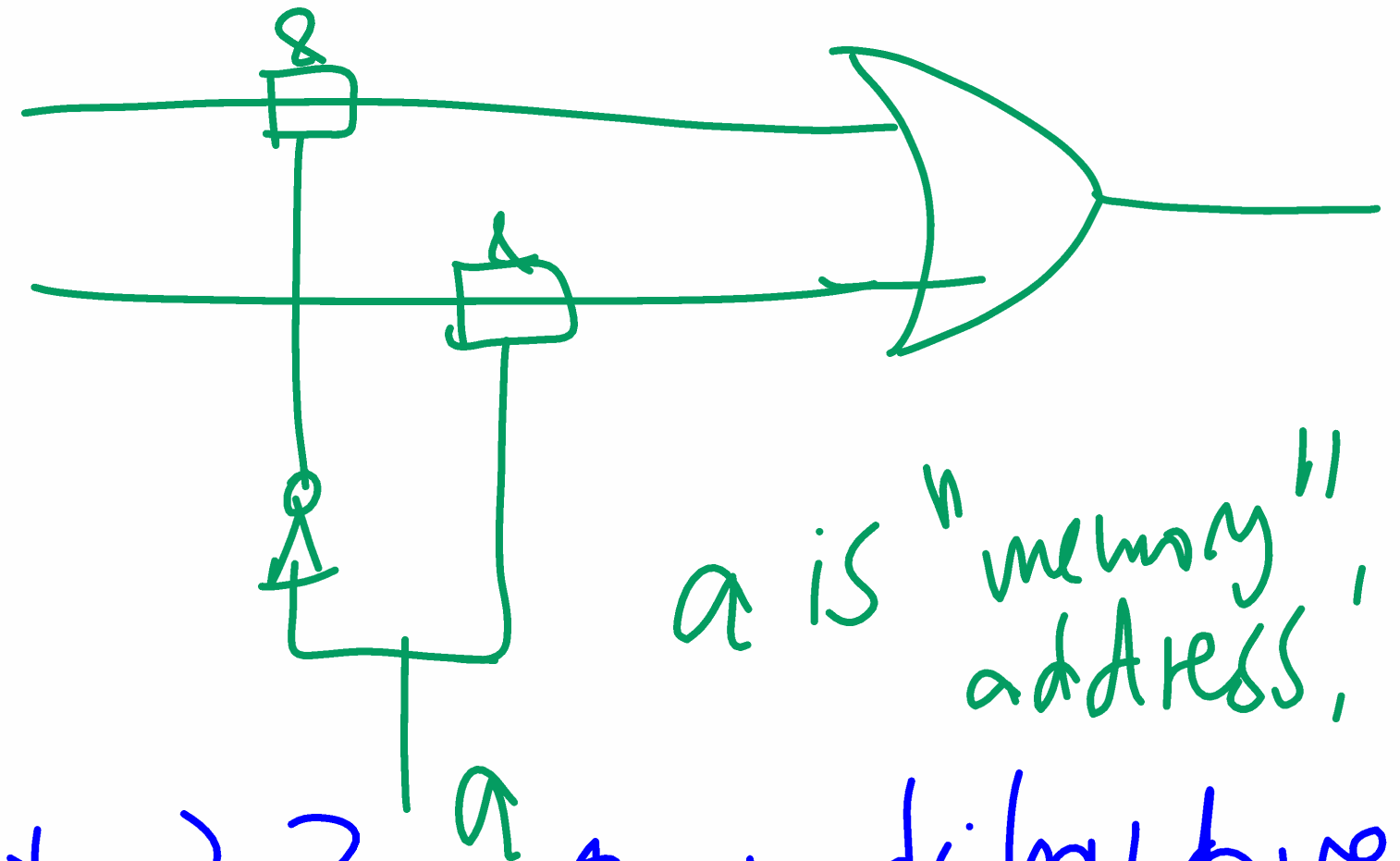
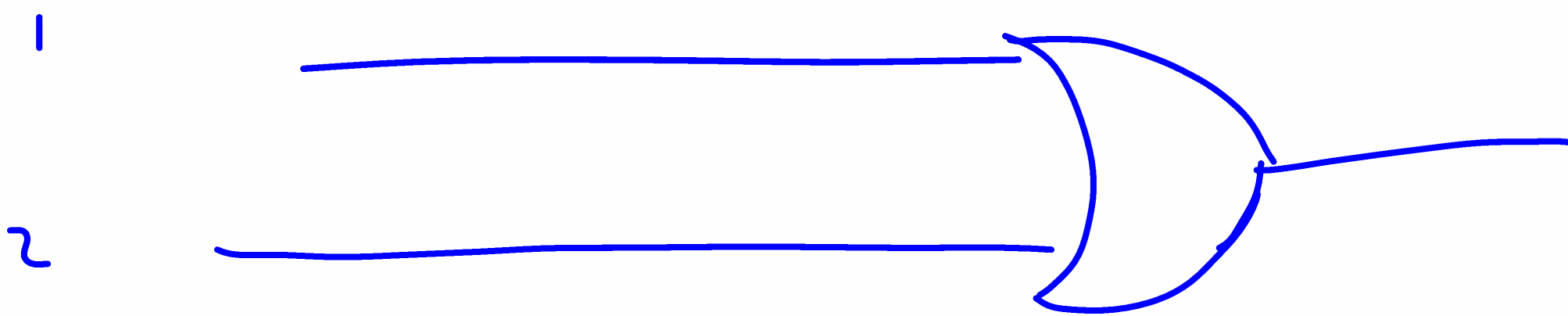
Now means



Addressing: Multiplexer

let's say horizontal lines have only a 2 coming from the "left"

"2-line" Multiplexer
1-bit



a is "memory" address,

How to choose line 1 but not 2? In other words: how do we read each input line?

1 1 1 2 1 1 1

Exercise:

Build a 3-bit Multiplexer
in C

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

