• SECTION 3 •

DECODERS

- • SAME PRINCIPLE AS A MUX
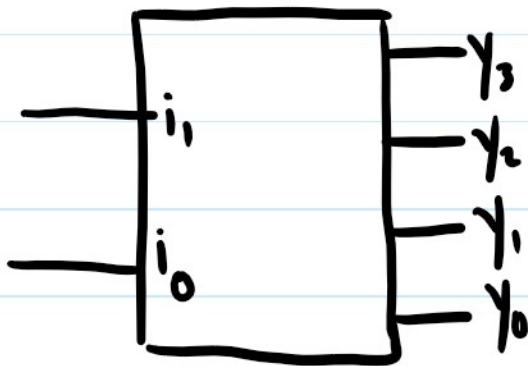
i_1	i_0	out
0	0	Y_0
0	1	Y_1
1	0	Y_2
1	1	Y_3

• WE HAVE N INPUTS THAT ACTUATE A SERIES OF 2^n OUTPUTS.
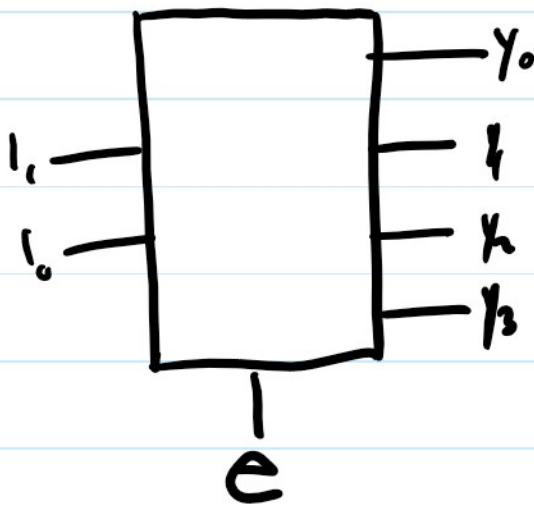
THE CIRCUIT
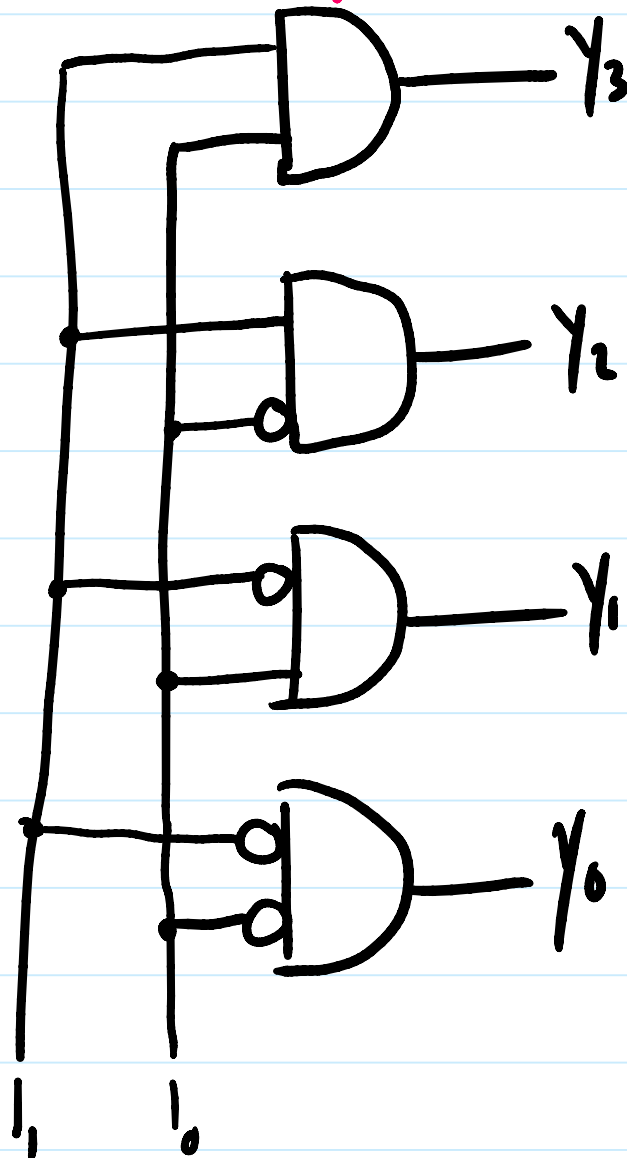
- So IF $I_1 I_0$ is the input then Y_3 is the only ouput set to 1. leaving the others at 0.

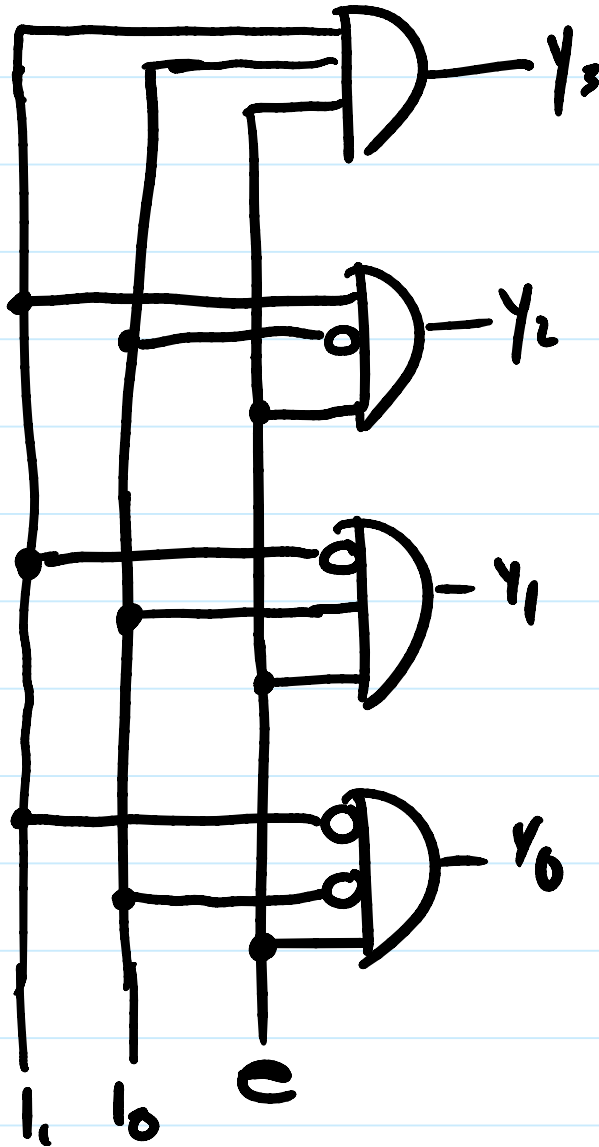"So BASICALLY BINARY $\rightarrow$ BASE10?

Enable Input

- Enable input is seen a lot in devices.
- The device only works if enable is 1.

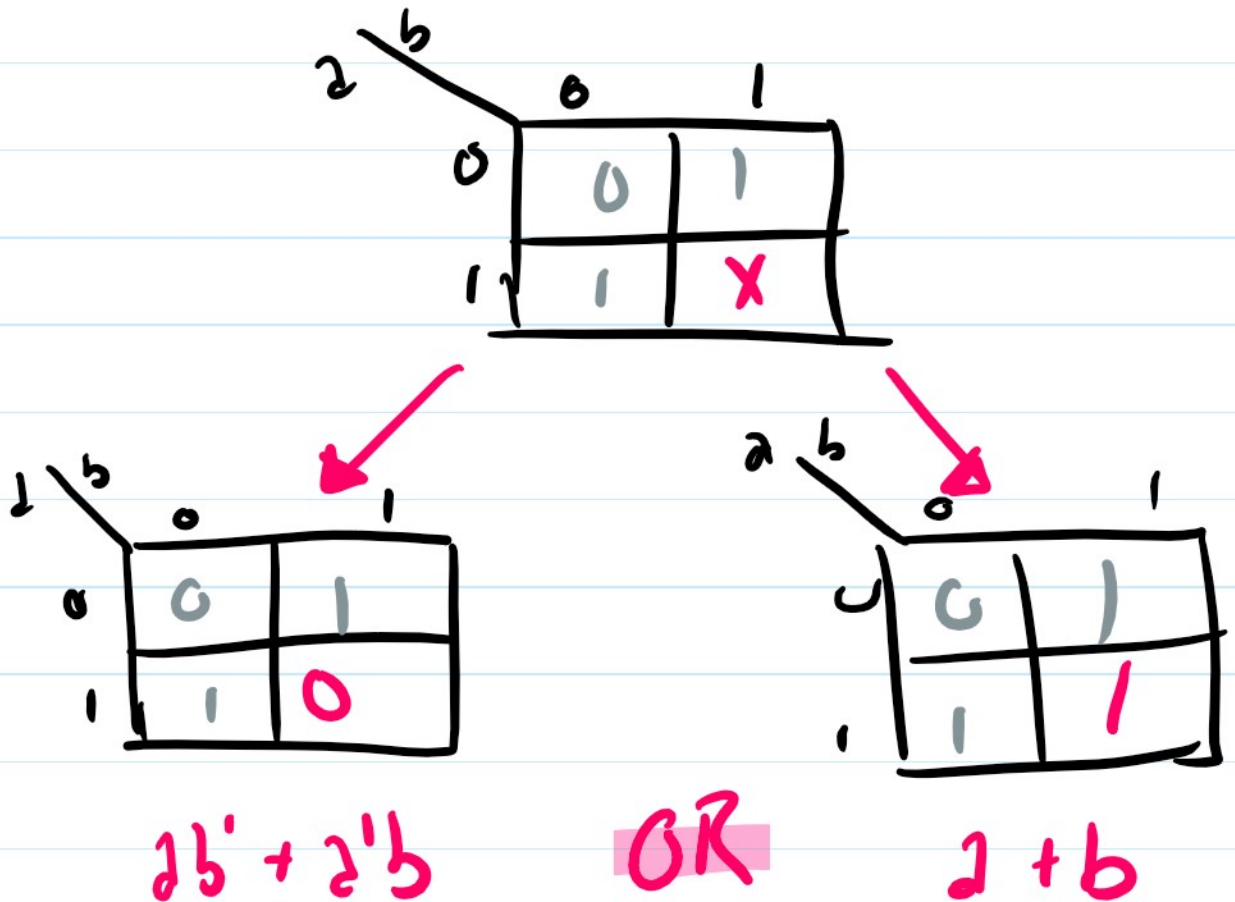| e	I_1	I_0	out
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	0
1	0	0	Y_0
1	0	1	Y_1
1	1	0	Y_2
1	1	1	Y_3

THE CIRCUIT

- THE AND GATES CAN ONLY OUTPUT 1 IF E IS 1

DON'T CARES

- PUT IN MINIMIZING

- PART OF FUNCTION WHERE THE OUTPUT DOESN'T MATTER

a\b	0	1
0	0	1
1	1	X

a\b	0	1
0	0	1
1	1	0

$ab' + a'b$

OR

a\b	0	1
0	0	1
1	1	1

$a + b$

- X IS THE "DON'T CARE"

- UP TO DESIGNER TO CHOOSE WHAT IT IS BASED ON EASE OF CIRCUIT