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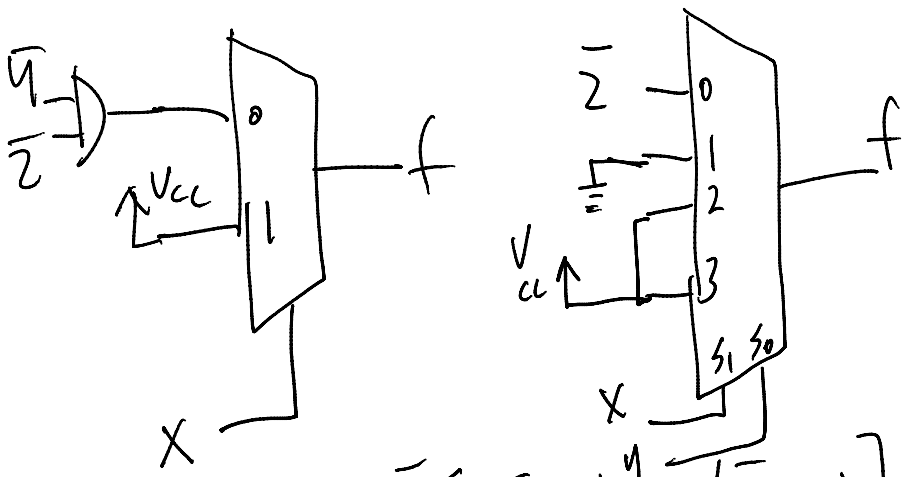
$$f(x,y,z) = \sum m(0,4,5,6,7)$$

$$f = \bar{x}\bar{y}\bar{z} + x\bar{y}\bar{z} + x\bar{y}z + xy\bar{z} + xyz$$

$$= \bar{x}\left[\ \bar{y}\bar{z}\ \right] + x\left[\bar{y}\bar{z} + \bar{y}z + y\bar{z} + yz\right]$$



$$= \bar{x}\left[\bar{y}(\bar{z}) + y(0)\right] + x\left[\bar{y}(\bar{z}+z) + y(\bar{z}+z)\right]$$

$$= \bar{x}\left[\bar{y}(\bar{z}) + y(0)\right] + x\left[\bar{y}(1) + y(1)\right]$$

$\bar{x}$: 0, 0 — $\bar{y}$: 0 — $\bar{z}$: 0 — y: 1 — x: 1 — $\bar{y}$: 0 — y: 1

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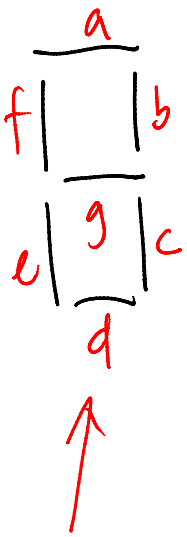

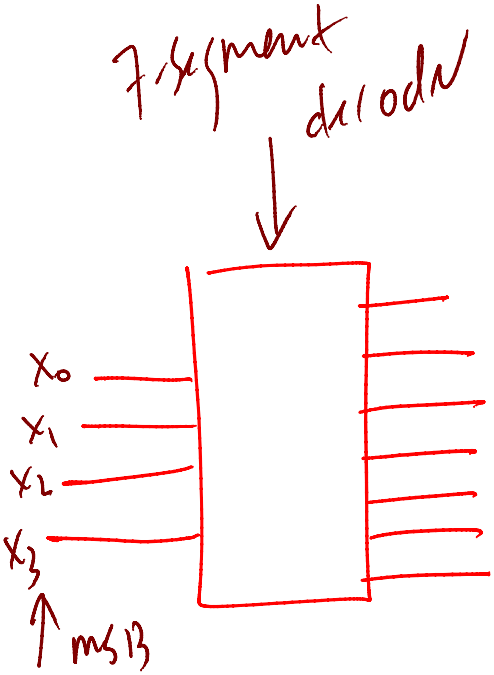

7-segment LED

x_3	x_2	x_1	x_0	a	b	c	d	e	f	g
0	0	0	0	1	1	1	1	1	1	0
⋮										
0	1	1	0	1	0	1	1	1	1	1
1	0	1	1	0	0	1	1	1	1	1

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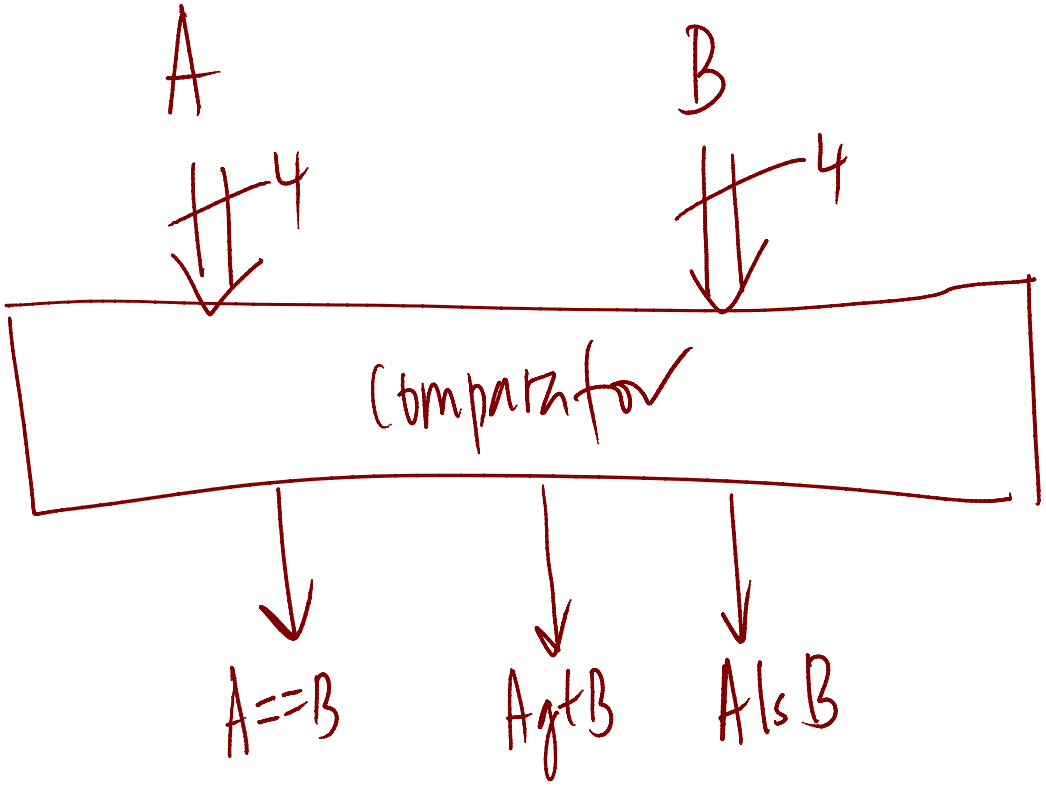
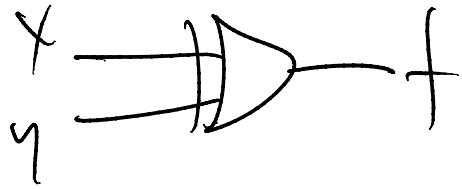
A, B ⇒ 4-bit



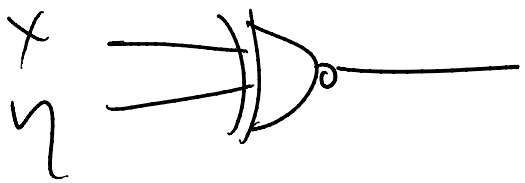
Adder

XOR

XNOR



$$f = \bar{x}y + x\bar{y}$$



$$f = xy + \bar{x}\bar{y}$$

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