



$$XOR = A \oplus B = (\bar{A} \cdot B + A \bar{B}) \Rightarrow$$

$$\bar{A} \bar{B} + \bar{A} \bar{B}$$

A	B	
0	0	0
0	1	1
1	0	1
1	1	0

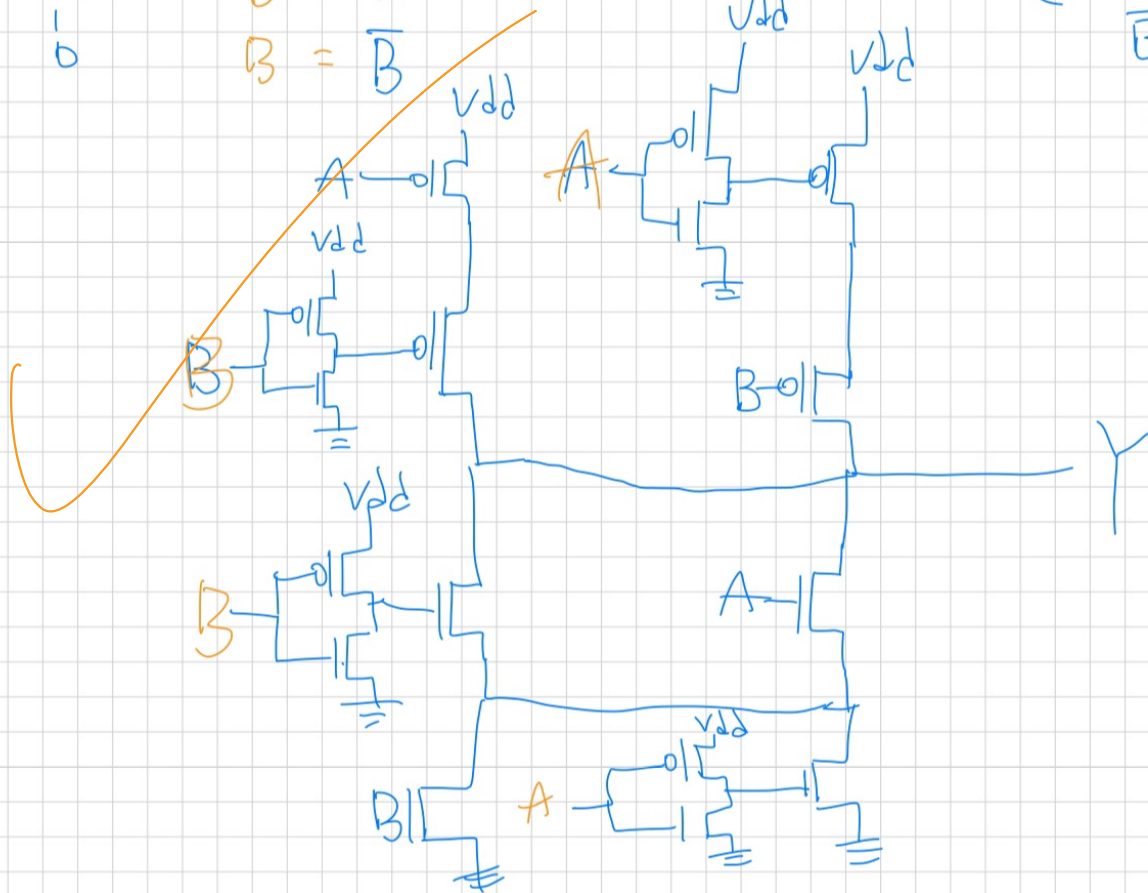
$$\bar{B} = \overline{\bar{B}}$$

$$B = \overline{\bar{B}}$$

SO(P)

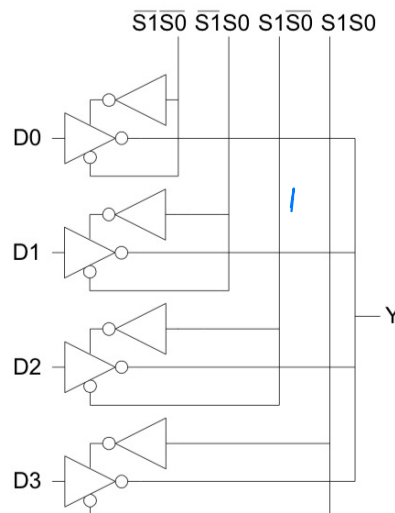
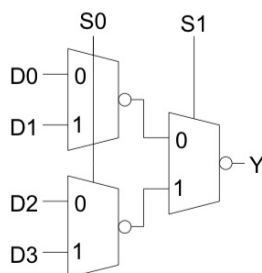
$$(A + \bar{B}) \cdot (\bar{A} + B)$$

POS



## 4:1 Multiplexer

- 4:1 mux chooses one of 4 inputs using two selects
  - Two levels of 2:1 muxes
  - Or four tristates



下午 4:20 10月17日 週四

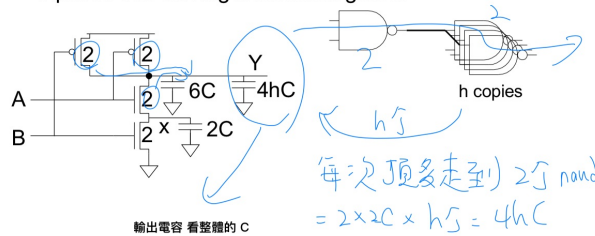
02-fault... x 113\_1\_B... x w6\_adv... x lect4\_... x lect3\_C...

4: DC and Transient Response CMOS VLSI Design Slide 55

4hC 不懂

## Example: 2-input NAND

- Estimate rising and falling propagation delays of a 2-input NAND driving  $h$  identical gates.



## Example: 2-input NAND