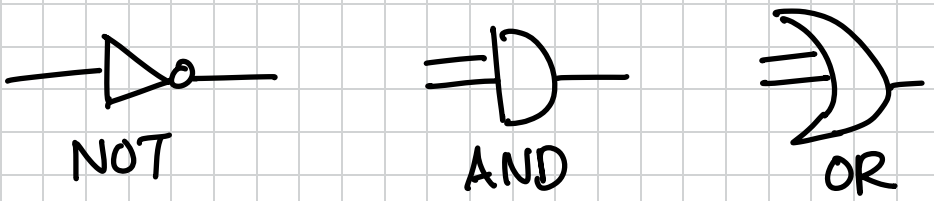


Basic Gates

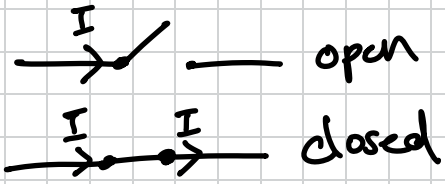
↑

Inside are transistors

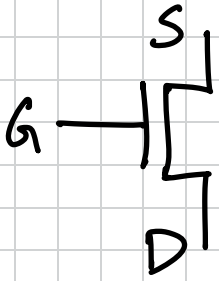
Functions of a transistors

① Amplification (Boost Signal)

② Switch ★ Circuits → VLSI Very Large Switch Interface

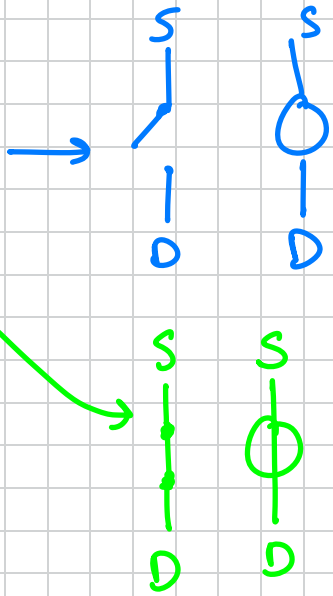


Transistor (n-type)

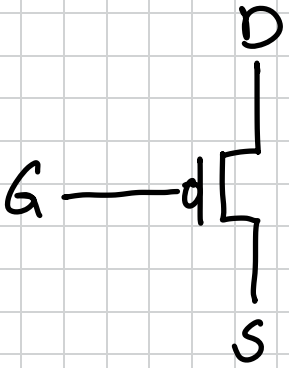


Gate G | Source S | Drain D

G	Switch state
0	open
1	closed



Transistor (p-type)



G	Switch state
0	closed
1	open

metal oxide semiconductor
NMOS

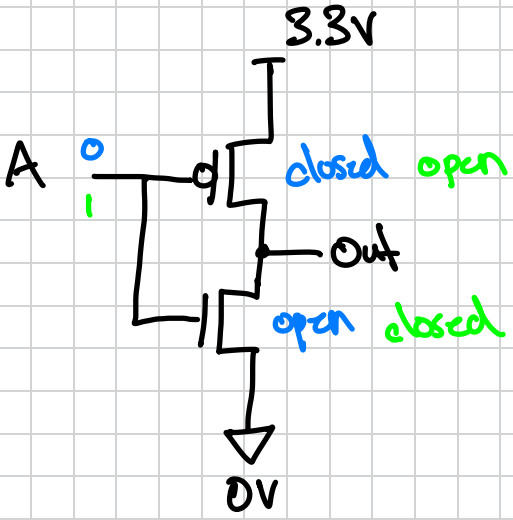
field effect transistor
FET

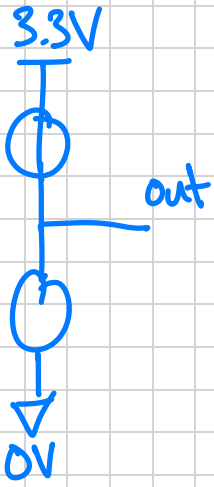
MOSFET

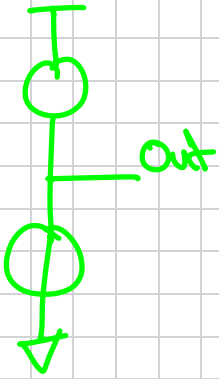
NMOS + PMOS = CMOS

NOT Gate

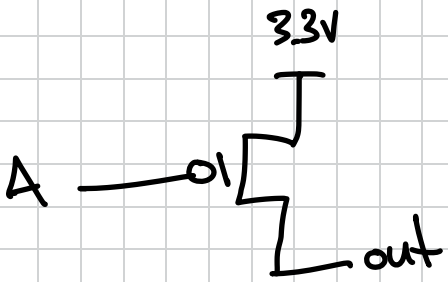
A	out
0	1
1	0



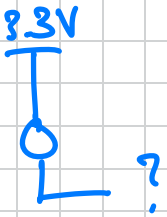


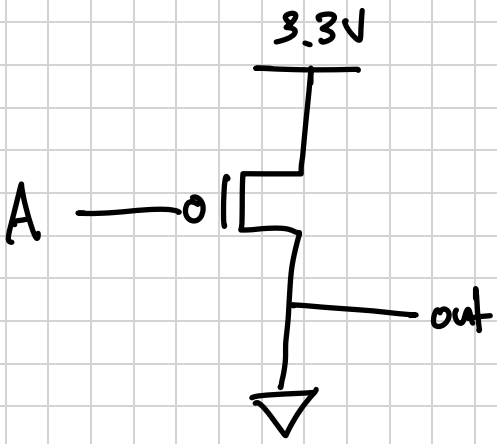


What if ?

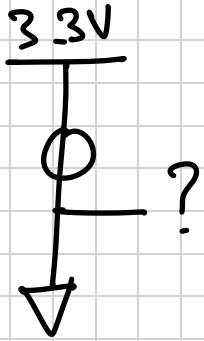


A	out
0	1
1	floats

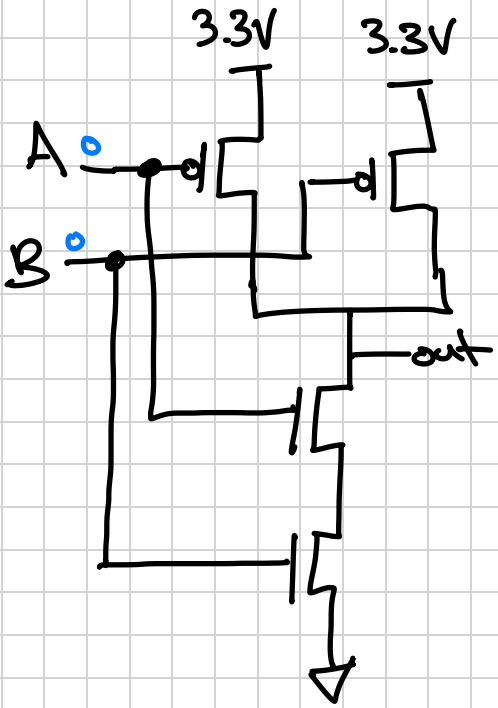




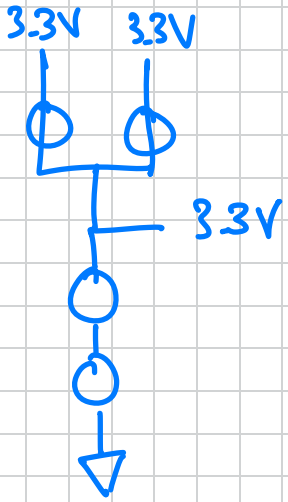
A	out
0	Hi Z



NAND



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



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

$A'B + AB'$