Sep 10

Circuits

Computer →
- 5V vs. 0V (diff in voltage) vs. no diff in voltage
- current on vs. current off

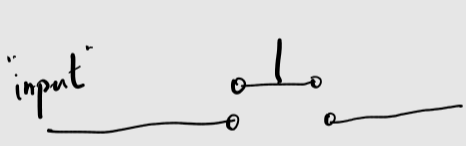
} Circuit

- TRUE vs. FALSE

} Logic

- 1 vs. 0 → binary numbers & bits
- closed vs. open

Switch



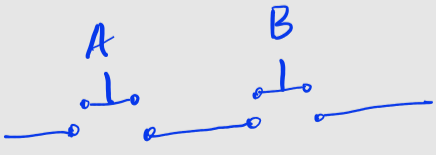
switch ~> it on



- circuit open
- switch OFF
- FALSE
- 0

- circuit closed
- switch is ON.
- TRUE
- 1

Consider



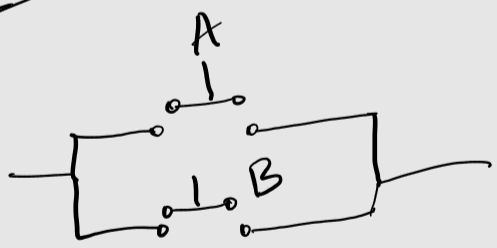
→ AND Gate



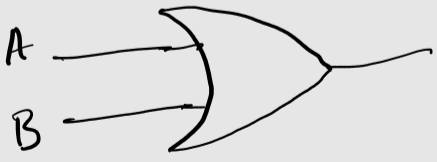
B

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

Consider



OR gate



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

NOT gate



A	NOT A
0	1
1	0

Addition

just like $9+1 = 10$

↳ decimal

A	B	A + B
0	0	00
0	1	01
1	0	01
1	1	10

here $1+1 = 10$ → binary

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

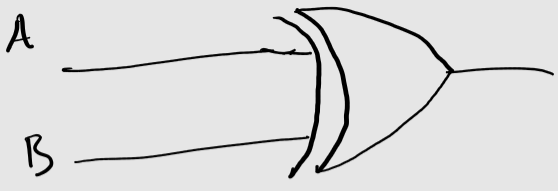
→ XOR gate

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

→ AND gate

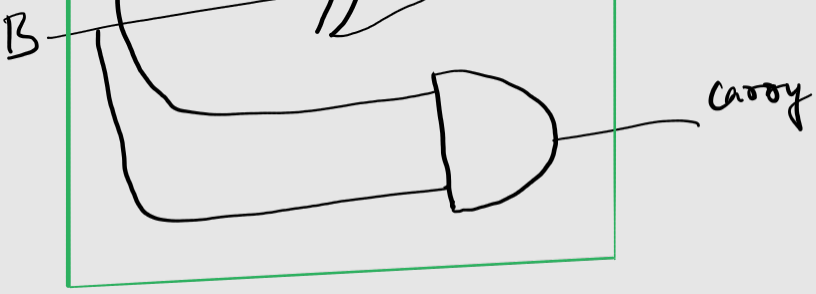
XOR gate : Exclusive OR gate

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



"Adder"




B
carry