Section 1.8: Gates

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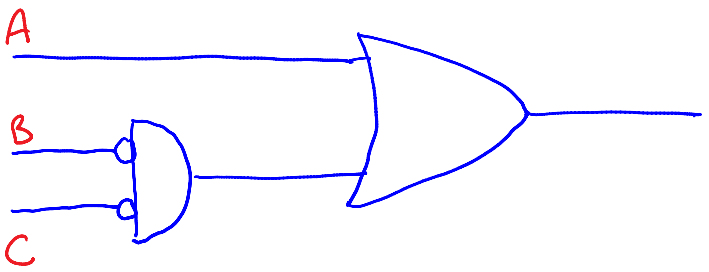
9:31 AM

example: draw the gate representation for

$$A + \overline{B}\,\overline{C}$$

note: do "and" before "or"



Boolean Algebra:

algebra in which the variables can only take one of two possible values: 0 or 1

"and": symbol is a dot $\cdot$ or implied (no symbol)

example: $A \cdot B$ or just AB

$A \cdot 1$

"or": symbol is a plus sign

example: $A + B$

"not": symbol is a bar above the variable or expression

order of operations:

"and" before "or" (like multiplication before addition)

the negation bar behaves like brackets

you can use brackets to force the order that you want

examples: state the order of operations:

① $A + BC$

↑ "and" then "or"

② $A + \bar{B}C$

↑ "not", then "and", then "or"

③ $\overline{A+B}\,C$

↑ or $(A+B)$, then "not", then "and"

④ $\overline{AC} + B$

↑ "and", then "not", then "or"

example: write the truth table for $A + \bar{B}\bar{C}$

A	B	C	$\bar{B}$	$\bar{C}$	$\bar{B}\bar{C}$	$A + \bar{B}\bar{C}$
0	0	0	1	1	1	1
0	0	1	1	0	0	0
0	1	0	0	1	0	0
0	1	1	0	0	0	0
1	0	0	1	1	1	1
1	0	1	1	0	0	1
1	1	0	0	1	0	1
1	1	1	0	0	0	1