Boolean Logic Gates

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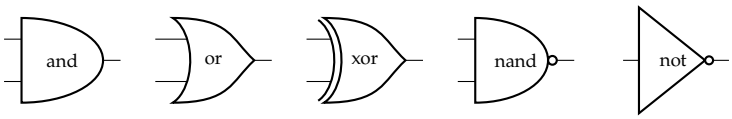
Gates

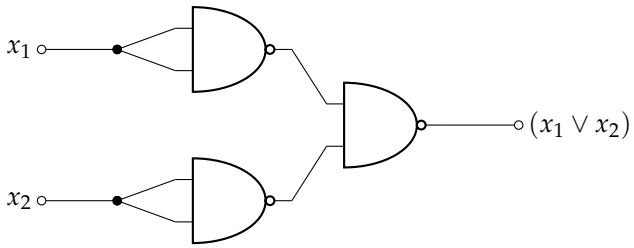


Tables

x_1	x_2	$\wedge$	$\vee$	$\oplus$	$\barwedge$	$\bar{x_1}$
0	0	0	0	0	1	1
0	1	0	1	1	1	1
1	0	0	1	1	1	0
1	1	1	1	0	0	0

Universal nand

Nand logic - wikipedia, 2023. URL `https://en.wikipedia.org/wiki/NAND_logic`



x_1	x_2	$x_1 \barwedge x_1$	$x_2 \barwedge x_2$	$\barwedge$	$x_1 \vee x_2$
0	0	1	1	0	0
0	1	1	0	1	1
1	0	0	1	1	1
1	1	0	0	1	1

All Possible One-Bit Gates

$g_i : \{0,1\} \rightarrow \{0,1\}$

x	g_0	g_1	g_2	g_3
0	0	0	1	1
1	0	1	0	1

All Possible Two-Bit Gates

$g_i : \{0,1\}^2 \to \{0,1\}$

x_1	x_2	g_0	g_1	g_2	g_3	g_4	g_5	g_6	g_7	g_8	g_9	g_a	g_b	g_c	g_d	g_e	g_f
0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
0	1	0	0	0	0	1	1	1	1	0	0	0	0	1	1	1	1
1	0	0	0	1	1	0	0	1	1	0	0	1	1	0	0	1	1
1	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0	1