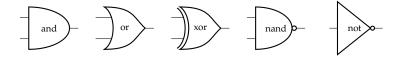
# Boolean Logic Gates

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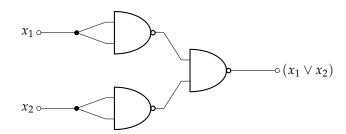
Gates



### Tables

	$x_2$					
0	0 1 0 1	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



$x_1$	$x_2$	$x_1 \wedge x_1$	$x_2 \wedge x_2$	$\land$	$x_1 \lor x_2$
0	0	1 1 0	1 0	0	0
0	1	1	0		
1	0	0	1		
1	1	0	0	1	1

### All Possible One-Bit Gates

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

_	x	<i>g</i> <sub>0</sub>	<i>g</i> <sub>1</sub>	<i>g</i> 2	<i>8</i> 3
	0	0	0	1	1
	1	0	1	0	1

Nand logic - wikipedia, 2023. URL https://en.wikipedia.org/wiki/ NAND\_logic

# All Possible Two-Bit Gates

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

$x_1$	$x_2$	<i>g</i> <sub>0</sub>	81	82	<i>8</i> 3	84	<i>8</i> 5	86	<i>8</i> 7	<i>g</i> <sub>8</sub>	<i>g</i> 9	8a	$g_b$	<i>8c</i>	8d	8e	$g_f$
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