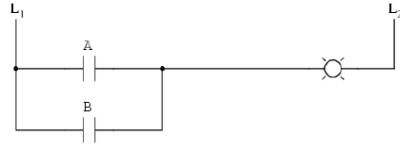


Boolean Algebra and Ladder Logic

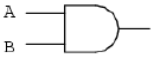
OR Operation

A	B	Output
0	0	0
0	1	1
1	0	1
1	1	1



AND Operation

A	B	Output
0	0	0
0	1	0
1	0	0
1	1	1



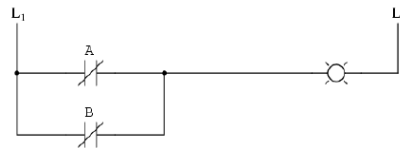
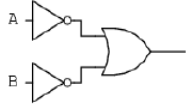
NOT Operation

A	Output
0	1
1	0



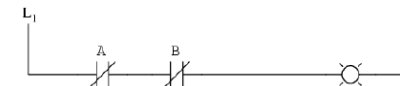
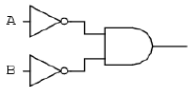
NAND Operation

A	B	Output
0	0	1
0	1	1
1	0	1
1	1	0



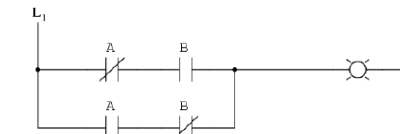
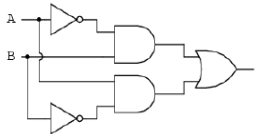
NOR Operation

A	B	Output
0	0	1
0	1	0
1	0	0
1	1	0



XOR Operation

A	B	Output
0	0	0
0	1	1
1	0	1
1	1	0



Boolean Logic is a form of Algebra in which values can either be true or false. It is the heart of logic design and computer systems.

Addition	Multiplication
$A + 0 = A$	$A.1 = A$
$A + 1 = 1$	$A.0 = 0$
$A + A = A$	$A.A = A$
$A + A' = 1$	$A.A' = 0$
$A + B = B + A$	$A.B = B.A$
$A + AB = A$	$A(A + B) = A$
$A + (A'.B) = A + B$	$A.(A' + B) = A.B$
$(A + B)' = A'B'$	$(A.B)' = A' + B'$

The last table entry is commonly known as **De-Morgan's Law**.