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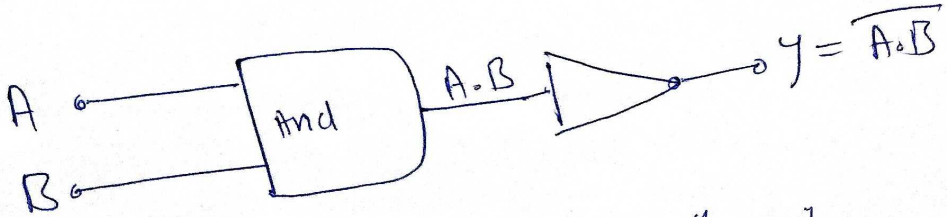
Q1 NAND GATE

The NAND GATE is a special type of logic gate in the digital logic circuit. The NAND gate is universal gate It means all the basic gates such as AND, OR, and NOT gate can be constructed using NAND gate.

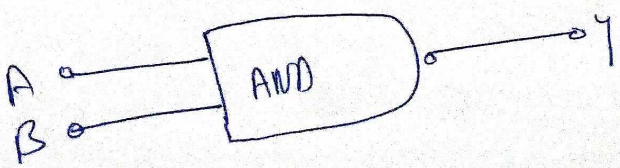
The NAND gate is combination of NOT - AND gate. The output state of the NAND gate will be low only when all the input are high.

Simply, this gate returns the complement result of the AND gate.

Logic design



Input AND gate plus a "NOT" gate



Input		output
A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

The logical boolean expression for the NAND gate is the complement of logical multiplication of inputs denoted by full stop or a single dot as $(A.B)' = y$

The value of y will be true when any one of the input is set to 0.

There are $2^2 = 4$ possible combination of inputs The truth table and logic design are given below.

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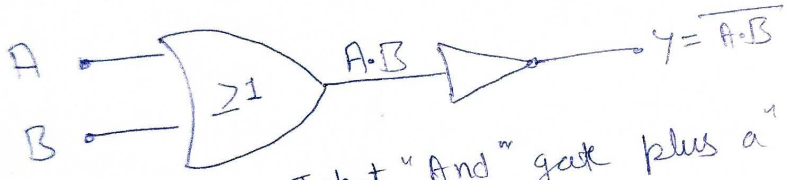
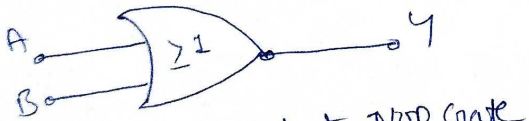
Q2 Discuss the working of NOR gate ..... with example

~~No~~ NOR Gate

The NOR gate is also universal gate. So, we can also form all the basic gates using the NOR gate. The NOR gate is combination of NOT-OR gate. The output state of the NOR gate will be high only when all the inputs are low. Simply the gate returns the complement result of the OR gate.



Input "And" gate plus a "NOT" gate

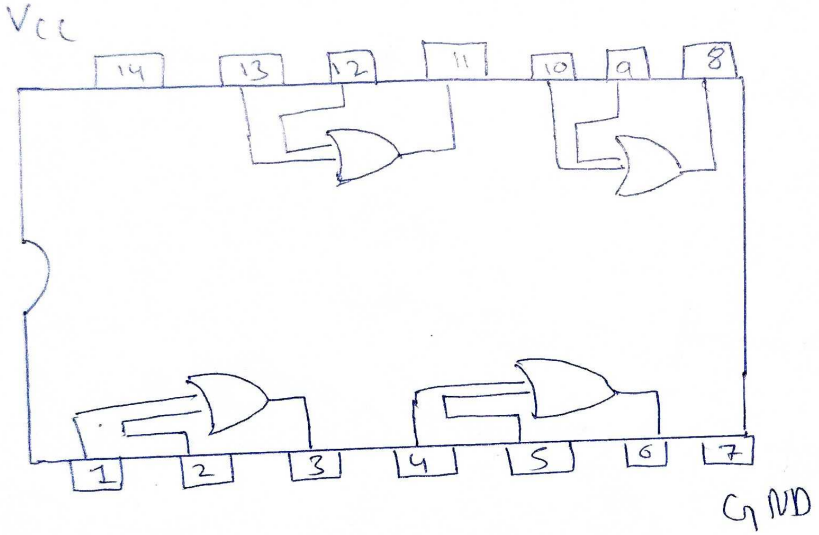


Input NOR Gate

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

Truth table of NOR gate

As in truth table the output of NOR gate should be HIGH only if both the gate input are Low. In any other case the output should be Low. So if any one or both input are High the output of NOR gate will be Low.



Nor gate is a digital logical gate designed for arithmetic and logical operations.