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Question: Discuss the working of NAND gate with the help of circuit diagram and truth table.

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

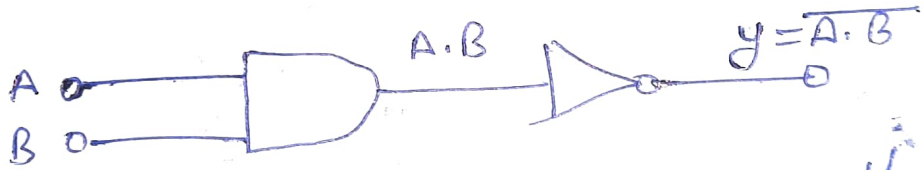
The logic or Boolean expression for the NAND gate is the complement of logical multiplication of inputs denoted by a full stop or a single dot as.

$$(A.B)' = Y$$

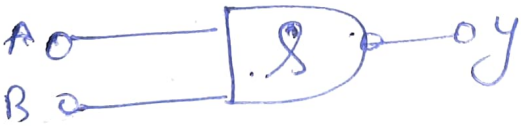
The value of y will be true when any one of the input is set to 0.

Types of Digital logic AND Gate

- The 2-input NAND gate
- This is the simple formation of NAND gate. In this types of NAND gate, there are only two input values and an output value. There are $2^2 = 4$ possible combinations of inputs. The truth table and logic design are given below.



2-input "AND" gate plus a "NOT" gate



Truth table

Input A	Input B	output (y)
0	0	1
0	1	1
1	0	1
1	1	0