Name → Nilesh Kumar  Course → MCA, A

Student ID → 21711127

Univ. Roll No → 2101134

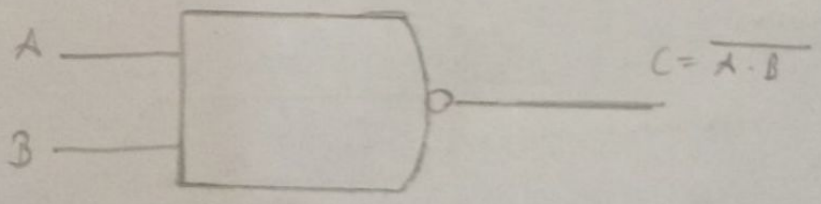
Ans1 → NAND Gate → The NAND gate is a Special type of logic Gate in the digital logic Circuit. the NAND gate is the universal gate. It means all the basic gates such as AND, OR, and NOT gate can be Constructed using a NAND gate. the NAND gate is the Combination of the NOT - AND gate, the output state of the NAND gate will be low only when all the inputs are high. Simply, this gate return the Complement result of the 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 (.)

$(A \cdot B)' = Y$

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

Circuit Diagram




this is 2 - input NAND gate.

this is Simple formation of the NAND gate. there ~~any~~ are only two input values and on output value.

there are $2^2 = 4$ possible Combination of inputs.

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## Truth table

| Input | | Output |
|---|---|---|
| A | B | Y |
| 0 | 0 | 1 |
| 0 | 1 | 1 |
| 1 | 0 | 1 |
| 1 | 1 | 0 |

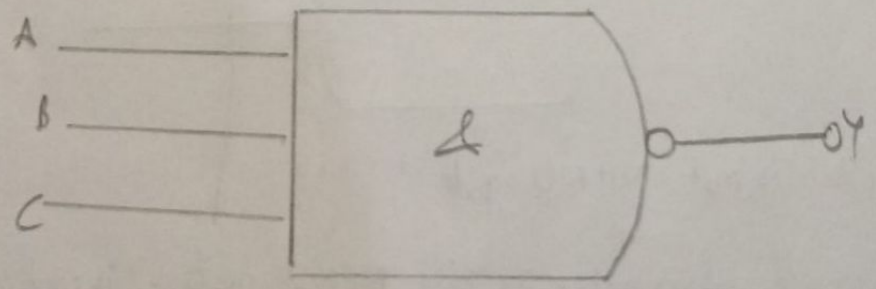
* 3 - input NAND Gate

the 3 - input NAND gate has three input. the Boolean Expression of the logic NAND gate is defined as the binary operation (.) the NAND gate can be cascaded together to form any no. of individual inputs. there are $2^3 = 8$ inputs.

Boolean Expression = $Y = \bar{A} \cdot \bar{B} \cdot \bar{C}$

Logic Diagram

Logic Diagram

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## Truth table

| Input | | | Output |
|---|---|---|---|
| A | B | C | Y |
| 0 | 0 | 0 | 1 |
| 0 | 0 | 1 | 1 |
| 0 | 1 | 0 | 1 |
| 0 | 1 | 1 | 1 |
| 1 | 0 | 0 | 1 |
| 1 | 0 | 1 | 1 |
| 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 0 |

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