Name - Sahib Khan , University Roll no - 2101179
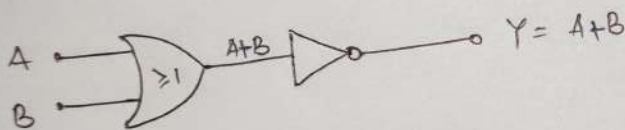
Q1. NOR Gate

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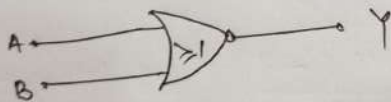
The NOR gate is the combination of the NOT-OR gate. The output state of NOR gate will be high only when all of inputs are low. This gate returns the complement result of OR gate.

$(A+B)' = Y$ → Boolean Expression

value of Y will be true when all of its inputs are set to 0.

$Y = \overline{A+B}$

or

Y

Truth Table

Input		Output
A	B	Y
0	0	1
0	1	0
1	0	0
1	1	0

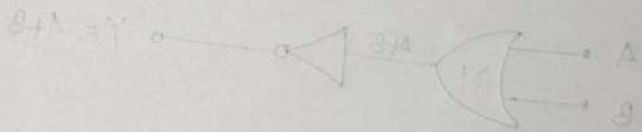→ There are $2^2 = 4$ possible combinations of inputs.

In 3-input NOR gate has 3 inputs.

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All the binary operations can be realized by only using NOR gates.

We know that the output of OR gate is 0 only when all inputs of OR gate are 0. Hence in the case of NOR gate, the output is 1 only when all input are 0.

In all other cases, that is for all other combination of inputs the output is 0.

The NOR function can also have any number of individual inputs and commercial available NOR gate IC's are available in 2,3 or 4 input types. If additional inputs are required, then standard NOR gates can be cascaded together to provide more inputs.

for ~~example~~.