Resistor-Transistor Logic NOR gate

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Abstract:

Resistor-Transistor Logic circuit is a bipolar saturated device and it's a basic logic circuits in Digital logical families. It is popular for simplicity. It consists of resistors as inputs and transistors as outputs and transistors are used for switching device and emitter of transistor is connected to ground and collector terminals are tied balanced and given to the supply through the resistor R_c.

Circuit Details:

In this circuit of 2-input Resistor-Transistor Logic NOR gate. T1 and T2 are the two transistors. A and B are the two inputs, given to the base of two transistors and Y is the output and when both the inputs A and B are low then both transistors are in saturated off state and voltage +Vcc will appears high at the output Y.   Q = (A+B)'

In any one of input either A or B is high and logic 1, then transistor input will be turned On and it will make a way so that the supply voltage passes to the ground through the RC resistor and the transistor and it will be 0v at the output Y and when both the inputs are high, it will operate the transistor to turn on and it will make a path for the supply voltage passes to the ground through resistor R_C and it will be 0v at the output Y.
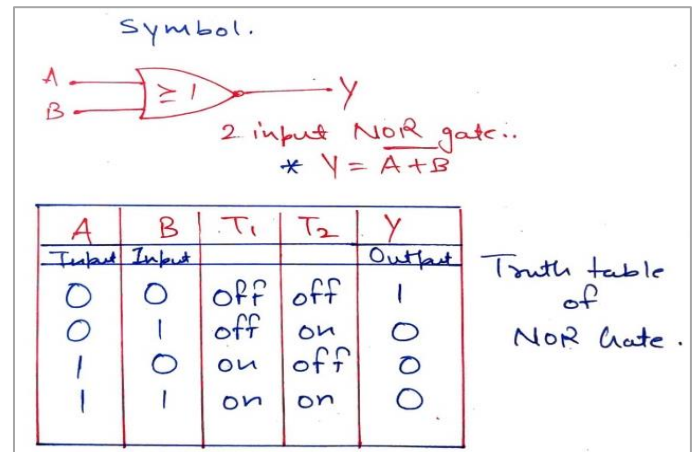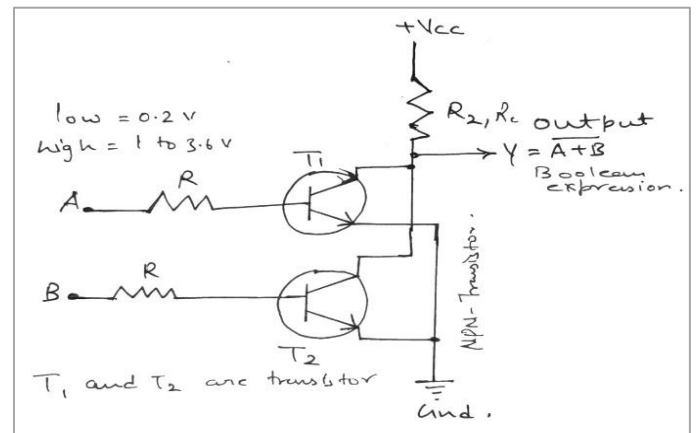
Reference Circuit:

Figure 1: Truth Table

Figure 2: 2-input RTL_NOR_gate circuit

References:

https://www.electronics-lab.com/article/logic-nor-gate/

https://www.youtube.com/watch?v=Jar8gw7oyGQ

https://electronics-club.com/resistor-transistor-logic-rtl/

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