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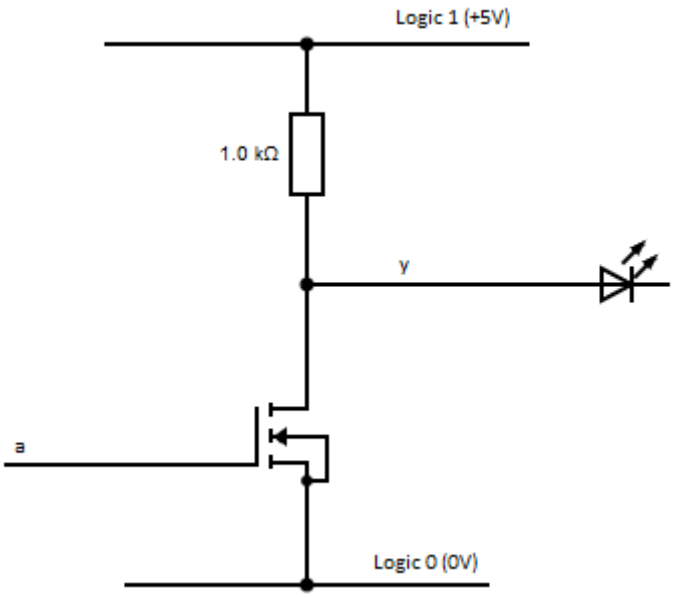
Electrotechnology lab 5 report:

Objective:

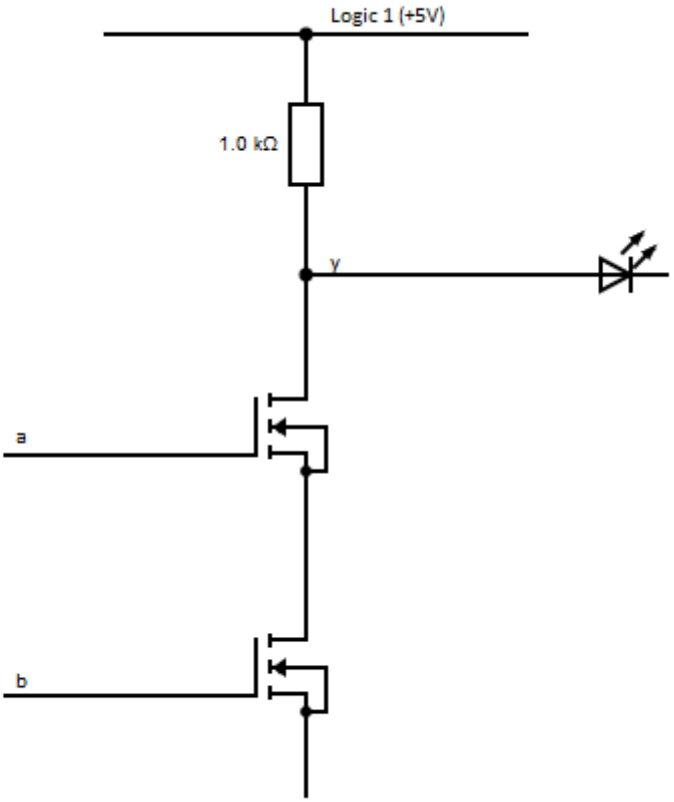
We want to build a NOT gate and a NAND gate using MOSFET transistor and a 1K Ohm resistance.

Method:

We build the following circuit and use an LED to check the truth tables.



The first diagram is for the NOT gate, it consists of only one transistor.



The second diagram is for the NAND gate, it is two transistor in series.

Data:

For the data we have the truth table of both circuits:

A	Y
0	1
1	0

This is the truth table for the first circuit, which correspond with a NOT gate.

A	B	Y
0	**0**	**1**
0	**1**	**1**
1	**0**	**1**
1	**1**	**0**

This is the truth table for the second circuit, which correspond with a NAND gate.

Data Analysis:

For the first circuit, the MOSFET transistor blocks current when no voltage is applied at the gate. And let current go through when there is a voltage. So when the input is 1, the current will be able to go through the transistor to ground. In that case no current goes to the LED and the output is 0. If the input is 0 then the current can only go through the LED and the output is 1.

For the second circuit, there are two MOSFET transistor, so two inputs. If both of them are opened, if the inputs are both 1, then the current can go through both of them and reach ground. That is the only way for the current no to go through the LED. We get an output of 0.

In all the other cases, one of the two transistor won't have current at its gate and so the current won't have access to ground. In those cases, it has to go through the LED and the output is 1.