Lab report #5

Electrotech CS1025

Jakub Slowinski
Student number: 16319781

16/12/16

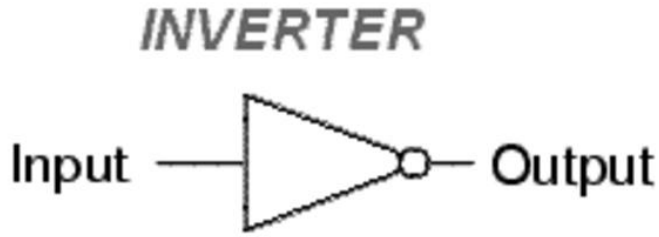
Lab Session #2- 4.00-6.00pm

Introduction:

The power supplied was D.C. in both cases

A light-emitting diode (LED) is a two-lead semiconductor light source. It is a p–n junction diode, which emits light when activated. When a suitable voltage is applied to the leads, electrons are able to recombine with electron holes within the device, releasing energy in the form of photons.

A transistor is a semiconductor device used to amplify or switch electronic signals and electrical power. It is composed of semiconductor material usually with at least three terminals for connection to an external circuit. The transistor is the fundamental building block of modern electronic devices.



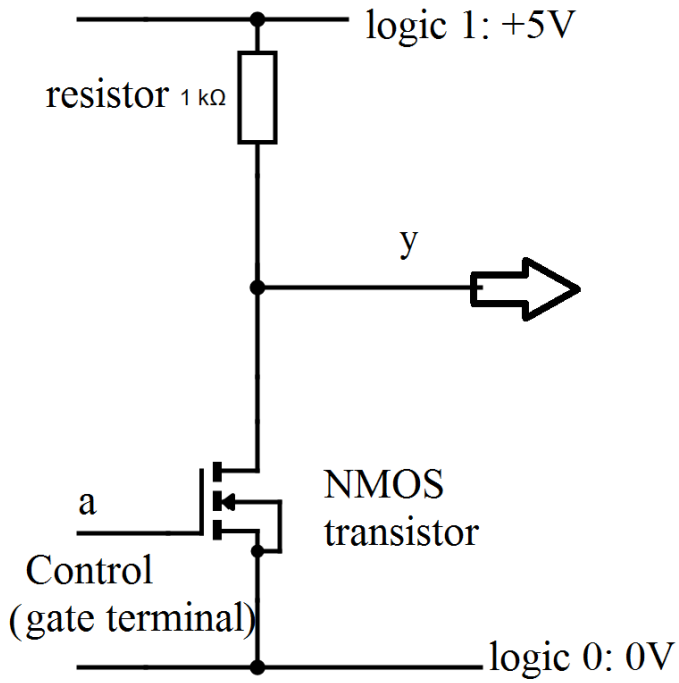
Input	Output
1	0
0	1

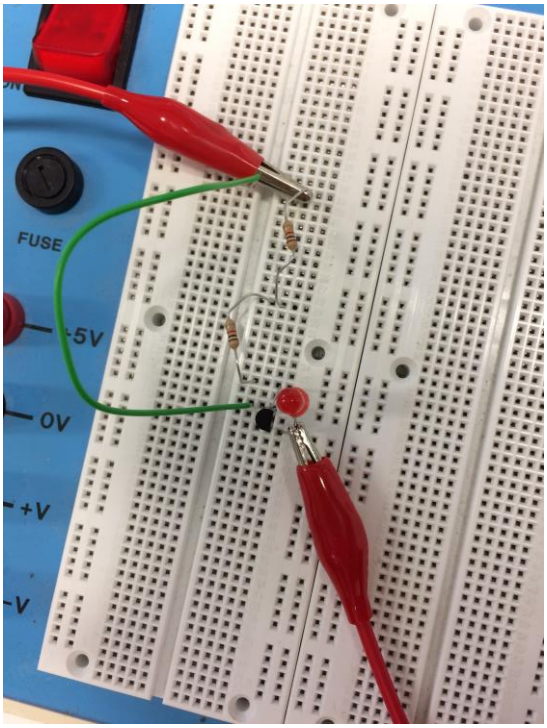
Part 1: Use the 2N7000 E-MOSFET and a 1K resistor. Connect a LED at the output. Note the input and output voltages and verify the truth table.

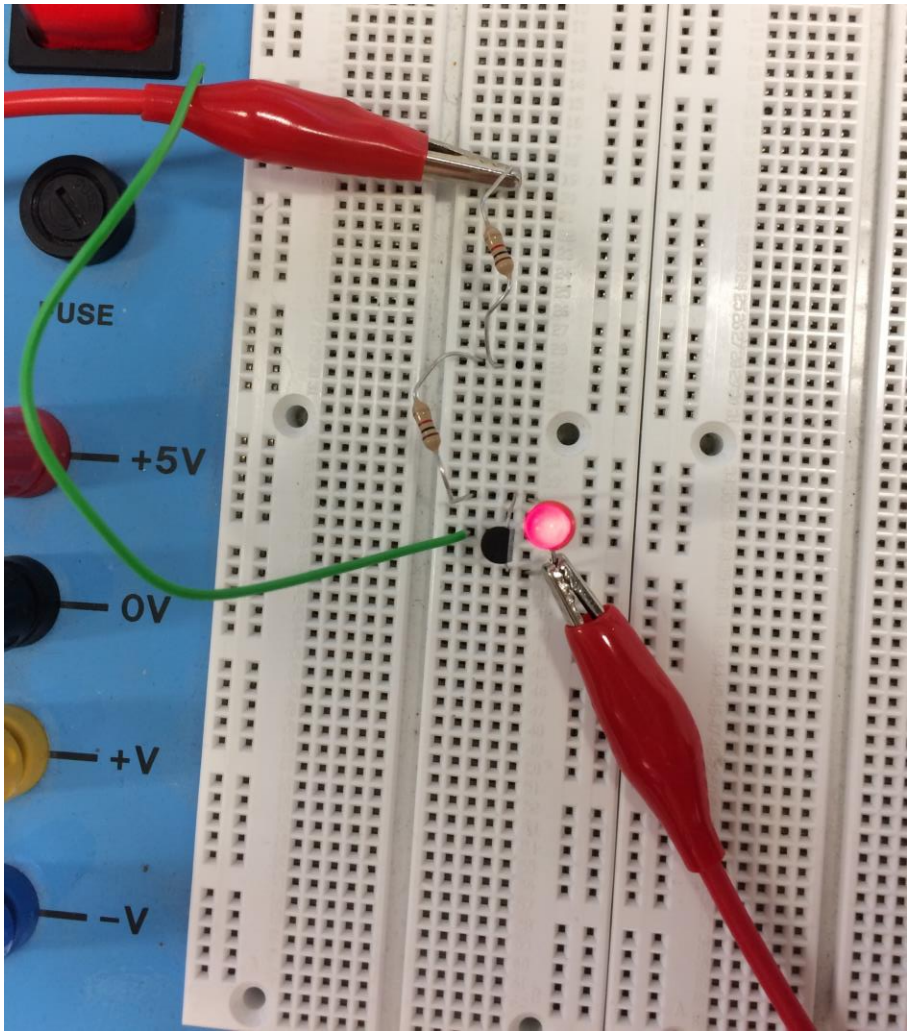
We used two 500 Ω resistors in series as there was a lack of 1k Ω resistors.

The green wire in my circuit acts as a NOT Gate.

An LED was connected across the output. This is how we determined if the NOT gate was working correctly.


logic 1: +5V
resistor 1 kΩ
y
a
NMOS
transistor
Control
(gate terminal)
logic 0: 0V


FUSE
+5V
0V
+V
-V

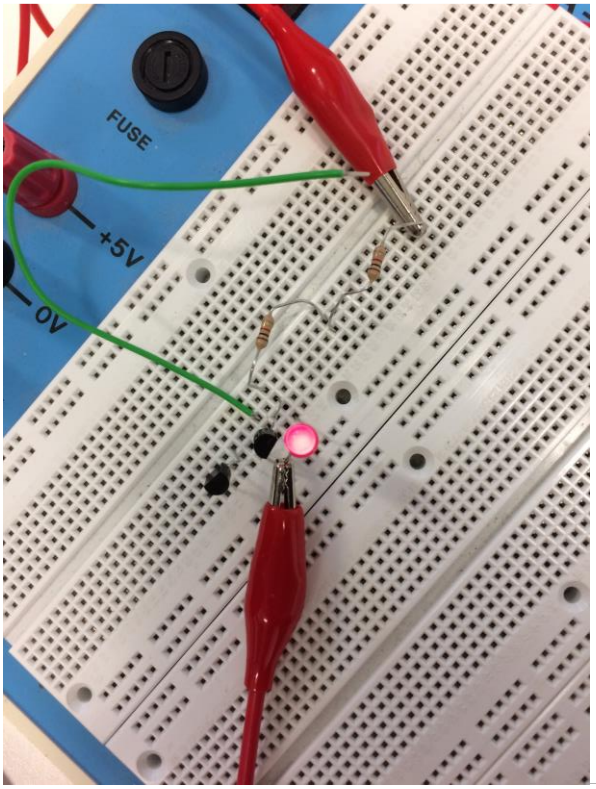


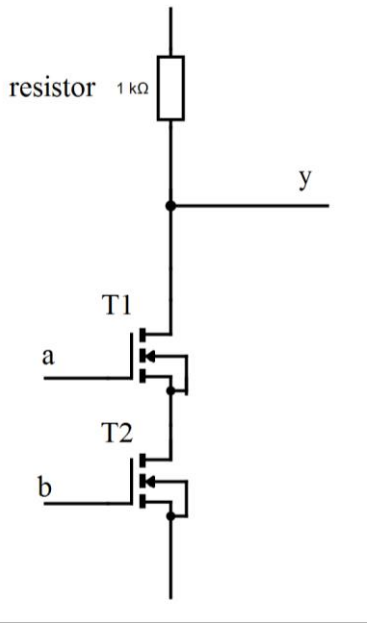
First we connected the circuit as shown in the circuit diagram above.

I set the D.C. power supply to 5 volts and the current to 0.2 amps.

When the green wire isn't touching the circuit, the LED lights up. When it does touch it, the LED doesn't light up. This is due to the fact that the wire acts as an inverter. This hereby verifies the invertors truth table. This is clearly illustrated in the above pictures.

Part 2





First we connected the circuit as shown in the circuit diagram above.

I set the D.C. power supply to 5 volts and the current to 0.2 amps.

Lights turn off when you touch the wire off the circuit.
Conclusion: In both parts the green wire acted as a not gate. When the wire was connected in the circuit it inverted the charge and the LED turned off.