LED DIMMING AND RGB COLORS LAB A2

1. TASK

How can you adjust (dim) the brightness of an LED and mix different colors with an RGB LED?

2. BACKGROUND INFORMATION

The brightness of an LED can be modified by changing the current.

3. EXPERIMENT DESCRIPTION

Lab A2.1: The LED must be switched in the forward direction. The positive pole of the battery must therefore be connected to the anode of the diode. We add a variable resistor so that the brightness of the LED can be adjusted and the current through the LED is limited.

Lab A2.2: The LED is reverse connected to the battery module. The positive pole of the battery must therefore be connected to the cathode of the diode. It flows only a very small reverse current.

Lab A2.3: All three colors red, green and blue can be faintly illuminated by bridging the RGB cathodes with the negative pole of the battery.

4. OBSERVATION AND EXPLANATION

Lab A2.1: By turning the potentiometer the current through the LED and thus its brightness can be changed.

Lab A2.2: The LED does not light up, because only a very small reverse current flows.

Lab A2.3: When making a „finger connection“ between an RGB contact (cathode) and the negative pole of the PSITRON battery module, one color of the RGB LED will always light up. By moistening the finger, the skin resistance decreases and a larger current can flow through the respective LED. It shines brighter.
If the cathodes of all three colours are connected to the negative pole of the battery then a mixed colour results.

LEARNING SUCCESS

An LED can be operated in the forward and reverse direction. In the forward direction their brightness varies with the current. In the case of RGB LEDs all colors can be generated by different control of the three LEDs red, green and blue.

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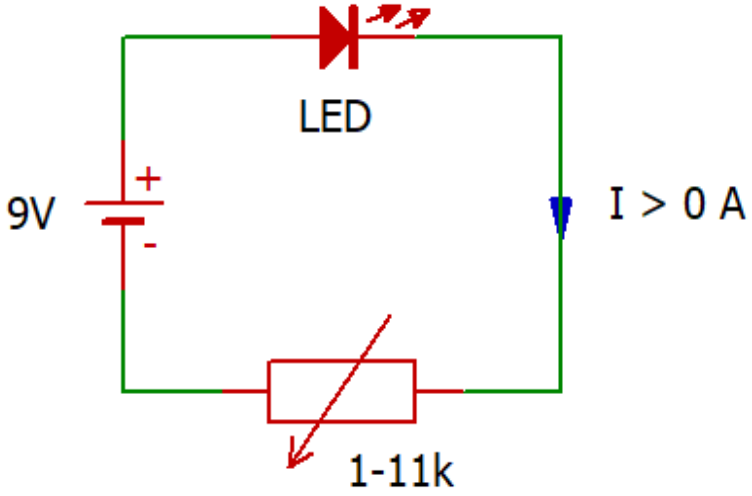
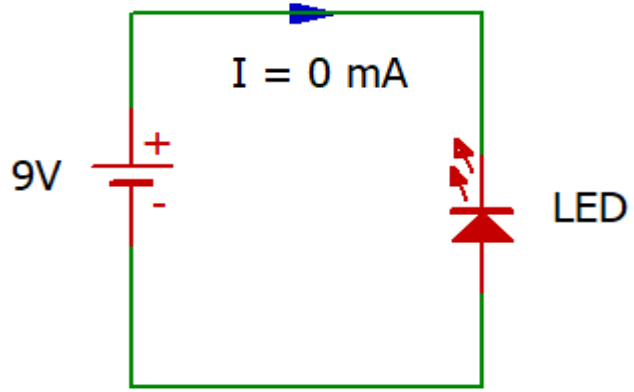
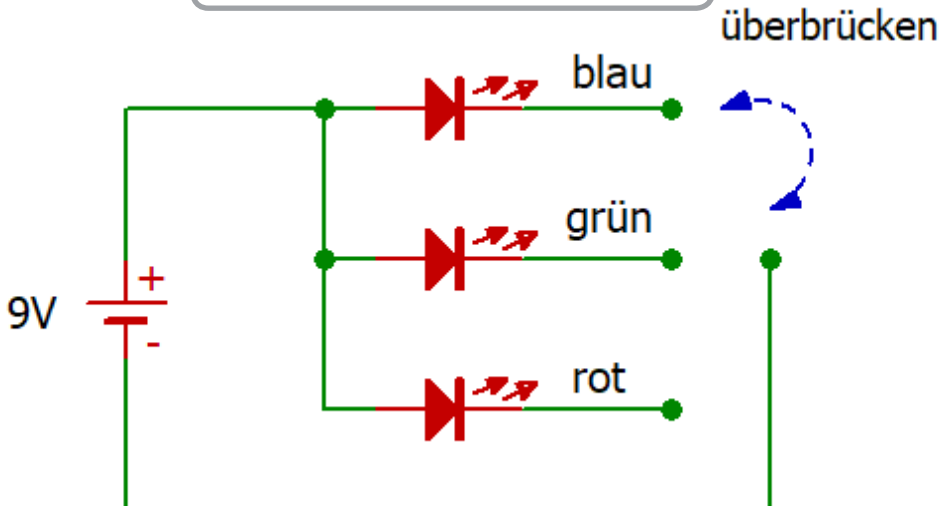
Lab A2.1: LED in forward direction



Lab A2.2: LED in reverse direction



Lab A2.3: Mix RGB colours



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