

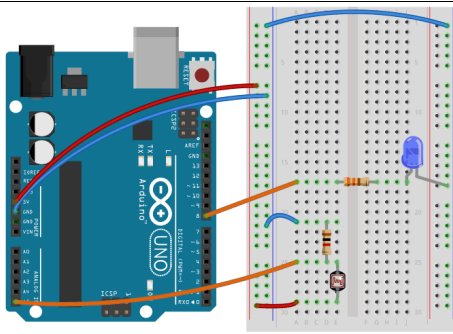
SCENARIO	
Title	Photoresistor - an alternative light switch
Summary	In electronics, programmable microcontrollers (MCUs) have a great prospect - certain integrated circuits that allow you to execute commands with only a constant voltage source without the help of an external computer. This allows the development of self-contained electrical appliances.
Author/s	Kristina Višnevskienė Date: 26/09/2019

Didactic objectives	
To program Arduino-controlled electronic devices that can be adapted to solve automation tasks.	
Physics <input checked="" type="checkbox"/>	Mathematics <input checked="" type="checkbox"/> Information Technology <input checked="" type="checkbox"/> Robotics <input checked="" type="checkbox"/> Programming <input checked="" type="checkbox"/>
Education Level:	10-12 years <input type="checkbox"/> 12-14 years <input checked="" type="checkbox"/>

Problem Statement	
<ol style="list-style-type: none"> To find out the purpose of common electronic components and their connection to circuits using a layout panel Learn how to program integrated boards in the Arduino programming language Get acquainted with the programming of special purpose electronic components. 	

BOM (Bill Of Materials needed)	
Computer, Kit Details: Microcontroller Board, Micro Controller Board USB Connection Cable, Layout Board, Layout Cables for Layout Board, light bulb, light sensor.	

Activity description	
<p>In this exercise, we will use a photoresistor, i.e. an element whose resistance changes under the influence of incident light (the more we illuminate it, the lower the resistance).</p> <p>Using a potentiometer, we can build a voltage divider that will depend on the amount of light in the environment. Assemble the layout as shown below. The photoresistor should form a divider together with a 1k resistor.</p>	



When a lot of light falls on the photoresistor, its resistance is minimal and there is a relatively "high" voltage at the point connected to the Arduino. When the light goes out, the photoresistor resistance increases, and the voltage across the divider is low.

Resources

With such a system, we are able to create a lamp that will turn on after dark.

Students' Evaluation

1. The student chooses the necessary tools, connects the electrical circuit, determines the parts used in it, using the microcontroller programming environment, and loads the submitted program.
2. In accordance with the circuit diagram of the electrical circuit, it selects the necessary means and connects the electrical circuit in a consistent, secure manner. Uses microcontroller programming environment, analyzes program, and modifies it.
3. In accordance with the circuit diagram of the electrical circuit, select the appropriate means; connect the electrical circuit in a consistent, safe and rational way. Independently use microcontroller programming environment, analyze program, and modify it. Performs all scheduled tasks.

Bibliography

<http://www.digikey.com/schemeit>
<http://fritzing.org/home/>

Scalability

Physics: Electrical Circuits.
 Information Technology: Programming

More information

Intersection modelling - control of four traffic lights. Make an electrical circuit, write a program.

„InnoExperiment – Innovative Approach to Teaching through Experiment”

Project Leader: Zespół Szkolno – Przedszkolny w Goniądzu (ZSP)

