Experiment 6 – Intelligent corridor lights

Instruction

You must have a lot of questions if pay attention to the various phenomena of daily life, such as corridor lights? How does it work? How did it automatically turn on the lights when we went up the stairs? With these questions in mind, let's start our sixth experiment: intelligent corridor lights.

Target

- Learn how the light sensor works and use it to make an intelligent corridor light with LED.
- Learn how to read the values from an analog module.

Required Parts

- Micro:bit x1
- Crowtail-Base shield for Micro:bit x1
- Crowtail-Light Sensor x1

- Crowtail-LED(Green) x1
- Crowtail-Cable x2
- USB cable x1

## Hardware learning and connection

The Light sensor module uses the GL5516 photoresistor to detect the light intensity of the environment. The resistance of the sensor decreases when the light intensity of the environment increases. The chip LMV358 is used as a voltage follower to enable you to get accurate data.
This module outputs an analog signal that shows the light intensity. It can be used in many occasions, such as Intelligent street light, intelligent corridor light, etc.
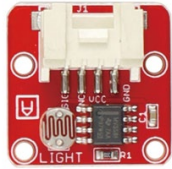
Connect Crowtail-Light Sensor and Crowtail-LED to P0 and P1 ports of Crowtail-Base shield for Micro:bit. The hardware connections are as follows:
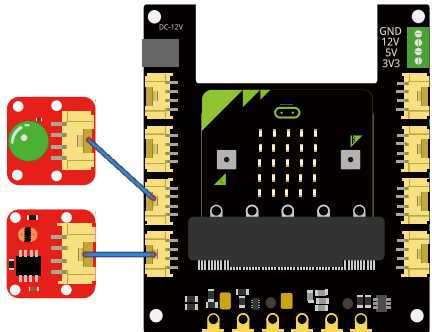
Programming and note
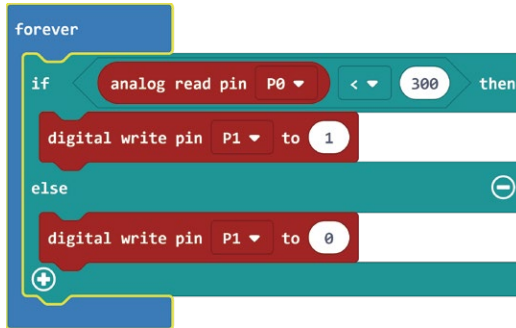
- **Analog Read:** Micro:bit uses an `analog read` block to read the value as a 10-digit number that ranges from 0 to 1023. The `analog read` block is a value based block, Which means that you have to insert it into a block with a matching shape. In this case, we use this value and compare it with the value(It indicates that the brightness is bright and we don't need to turn on the LED when threshold we set is larger than this value; when it is less than this value, it indicates that the brightness is dark and we need to turn on the LED).

- **Download the program to micro:bit to see what happens.**

Result
The LED will not light up during the day (in a bright environment). And when the daylight gradually dims into the night, the LED will light up automatically. If the LED does not change, try to adjust the threshold you set.

Do you have plants in your home? Did you know that a plant needs light to grow? If there is no enough light, plants will wither. Let's protect them and think about how to use this light sensor to solve this problem.