

LDR with Arduino

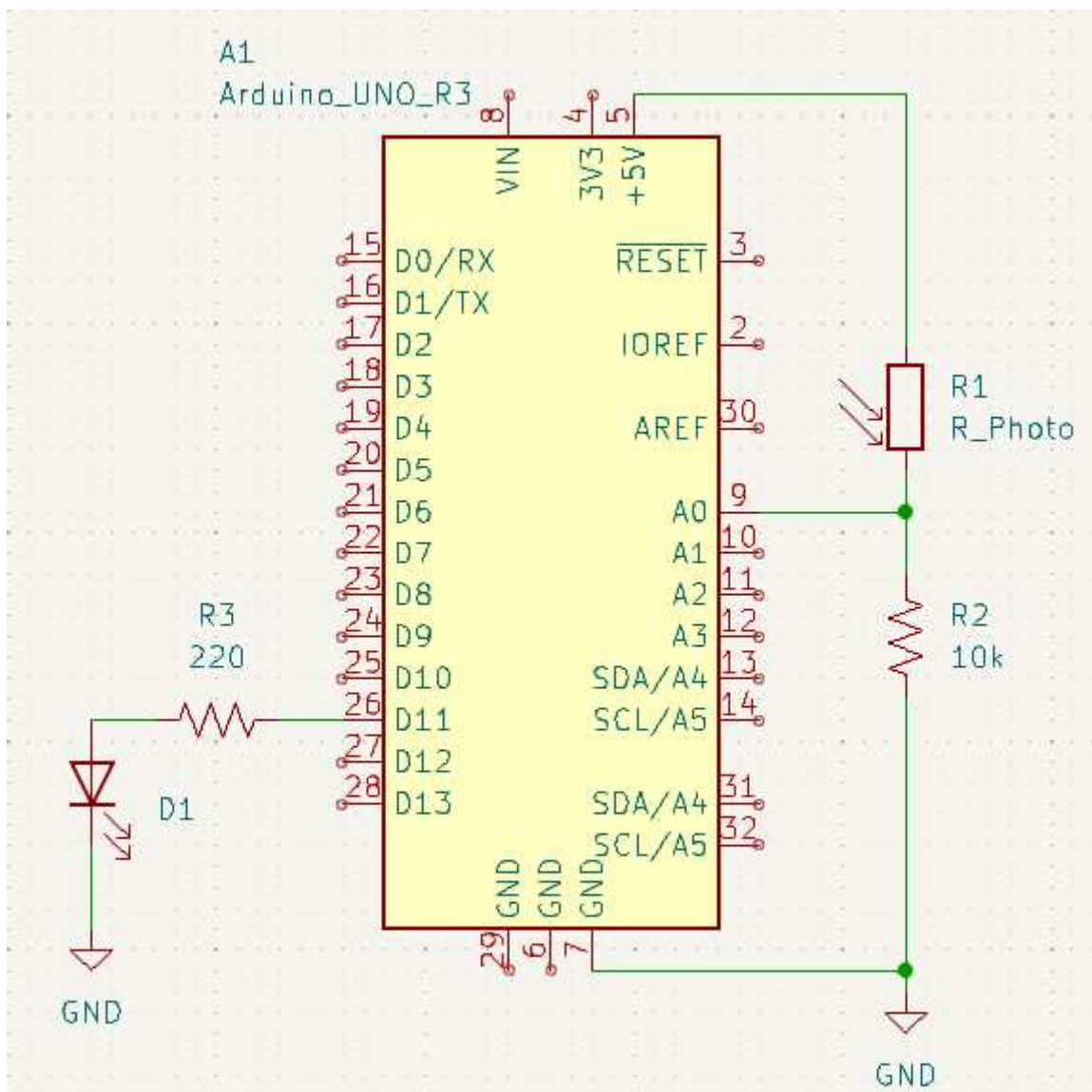
LDR Working Principle

LDR stands for Light-Dependent Resistor. As its name suggests, it is a resistor whose resistance changes depending on the amount of light exposed to it. It also has many other names, such as photoresistor and photocell.

An LDR works off the principles of photoconductivity, an optical phenomenon in which a material's conductivity increases when it absorbs light.

When there is more energy in the light that the LDR is exposed to, more current flows through it, so its resistance decreases.

Schematic



Code

Since the LDR is an analog device, you can compare it to a predetermined threshold. The code below will turn on an LED if the reading is above 500:



This program yields best results in a dark room and with a flashlight to provide a large difference between low and high readings.

```
// Pin constants
#define LDR_PIN A0
#define LED_PIN 11

#define THRESHOLD 500

void setup() {
  pinMode(LED_PIN, OUTPUT); // set LED pin as output
  Serial.begin(9600); // Open serial port
}

void loop() {
  int sensorValue = analogRead(LDR_PIN); // Read LDR value

  if (sensorValue > THRESHOLD) { // LDR reading above 500
    digitalWrite(LED_PIN, HIGH);
  } else { // LDR reading below 500
    digitalWrite(LED_PIN, LOW);
  }
  Serial.println("LDR Reading: " + String(sensorValue)); // Print readings to serial
  monitor

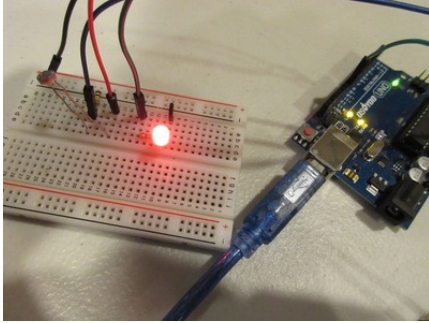
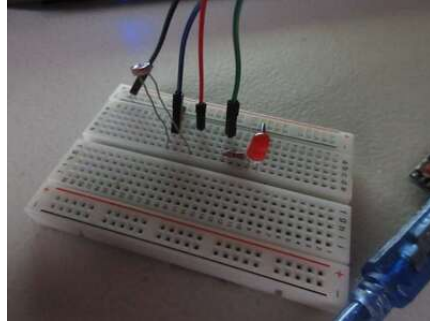
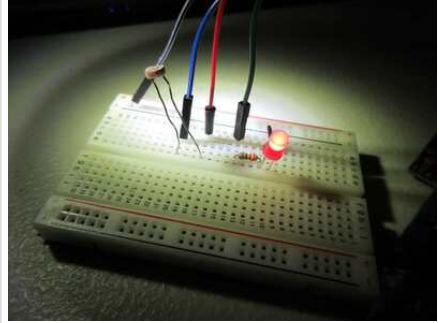
  delay(2); // Let ADC settle
}
```

Serial monitor output

```
LDR Reading: 805
LDR Reading: 802
LDR Reading: 797
LDR Reading: 799
LDR Reading: 804
LDR Reading: 802
LDR Reading: 797
LDR Reading: 799
LDR Reading: 803
LDR Reading: 802
LDR Reading: 797
LDR Reading: 799
LDR Reading: 803
```

LDR Reading: 802
LDR Reading: 796

Images

Breadboard top view	Dark room	With a flashlight
 A top-down view of a breadboard circuit. A red LED is illuminated. To the right, an LDR sensor module is connected to the breadboard. A blue USB cable is plugged into the module.	 The same breadboard circuit in a dark environment. The red LED is not lit, and the LDR sensor module is visible in the background.	 The breadboard circuit is illuminated by a flashlight. The red LED is lit, and the LDR sensor module is clearly visible in the foreground.