

Hope Foundation's
Finolex Academy of Management & Technology, Ratnagiri
Department of MCA
MCALE232 Internet of Things Lab

Practical 6

Aim: - To interface **LDR (Light Dependent Resistor)** with Arduino.

Components Required :

Arduino Board, Bread Board, LDR (Light Dependent Resistor), Resistors, Connecting wires.

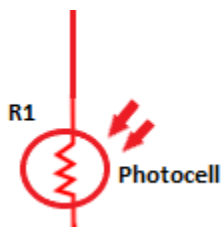
Theory:

LDR (Light Dependent Resistor) project uses the photoresistor to light an LED. The LED will light up whenever there is dark or no light over the sensor.

It is defined as a **light-controlled resistor**, which is also called as LDR. It is a variable resistor that controls the resistance in accordance with the received light intensity. It means, the resistance decreases as intensity of light increases.

How to calculate the output voltage using photoresistor?

The structure of photoresistor is shown below:



The formula to calculate the dark output voltage is given below:

$$V_{out} = V_{in} \cdot \frac{R2}{R1 + R2}$$

where,

V_{in} = 5V

V_{out} = Output voltage

Here, **R2** is the resistance connected in series with the photoresistor = **10K Ohm**.

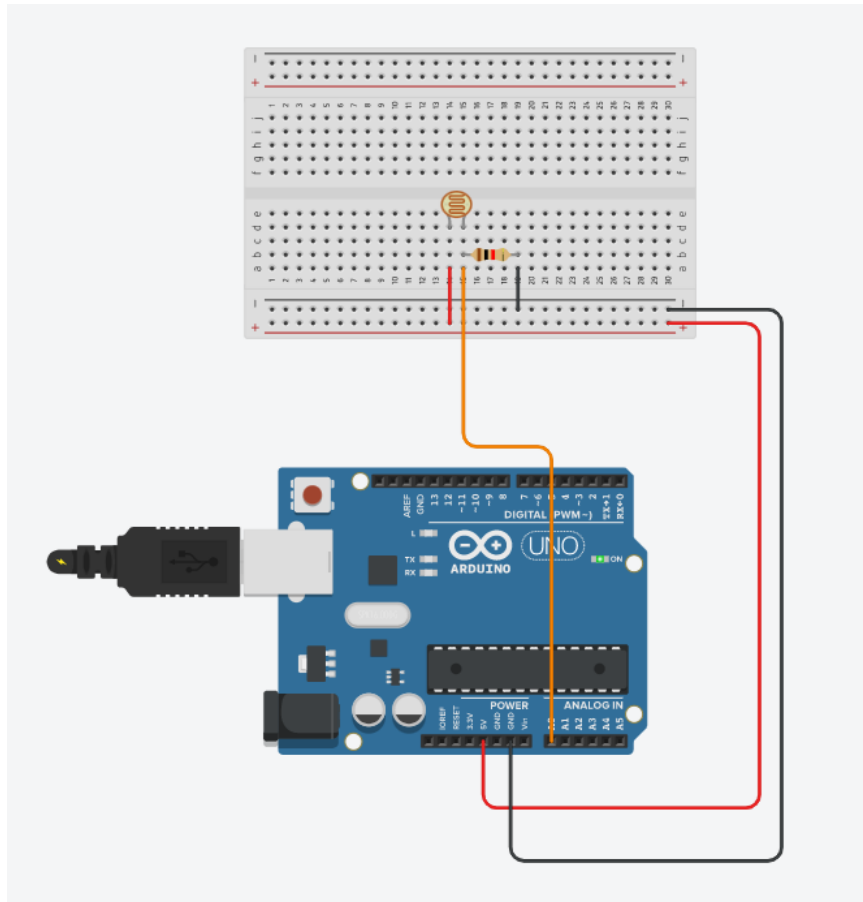
R1 is the resistance of the photoresistor.

Implementation :

The connection of the practical is as below:

- Connect the positive leg of the LED in series with the resistor to the desired I/o pin number of the Arduino board.
- Connect the negative leg of the LED to the Ground.
- Connect one edge of the photoresistor to the 5V pin on the Arduino board.
- Attach a 10K ohm resistance in series with another edge of the photoresistor and connect it to the GND.
- Connect the edge of the photoresistor to the analog pin A0.

Circuit Diagram:



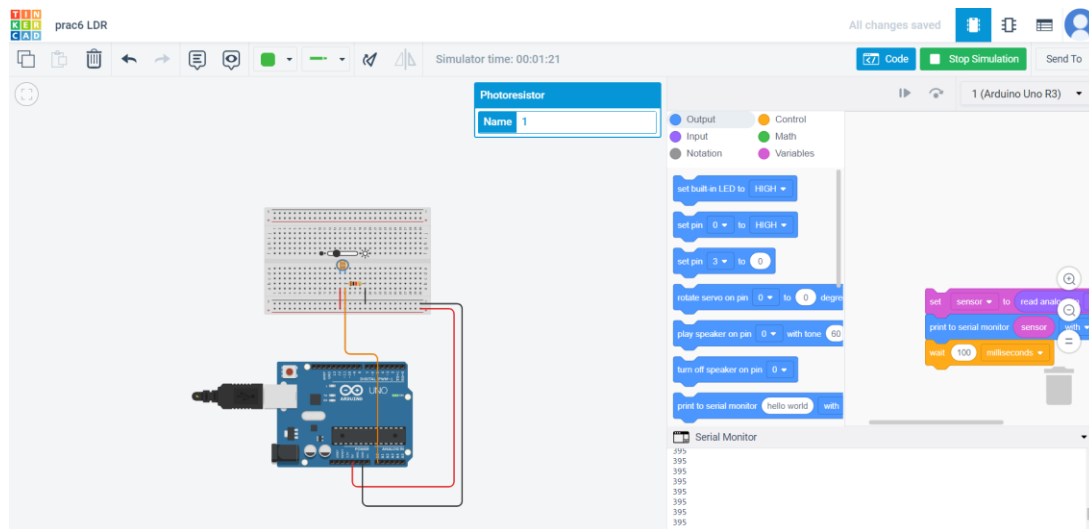
Program:

```
// C++ code
//
int sensor = 0;

void setup()
{
  pinMode(A0, INPUT);
  Serial.begin(9600);
}

void loop()
{
  sensor = analogRead(A0);
  Serial.println(sensor);
  delay(100); // Wait for 100 millisecond(s)
}
```

Output:



Conclusion: Thus we studied the interfacing of Light Dependent resistor and how the resistance changes depending on the light.