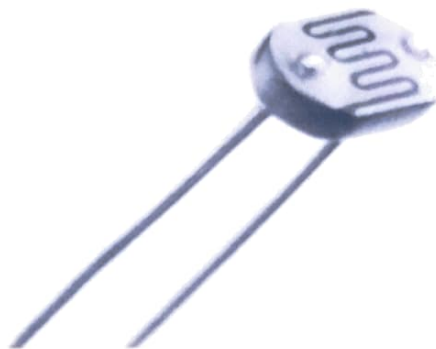# Practical 4

Detection of the light using photo resistor

Introduction: A photo resistor or photocell is a light-controlled variable resistor made of a high resistance semiconductor. The resistance of a photo resistor decreases with increasing incident light intensity. A photo resistor can be applied in light-sensitive detector circuits, and light- and dark-activated switching circuits. It's also called light-dependent resistor (LDR).
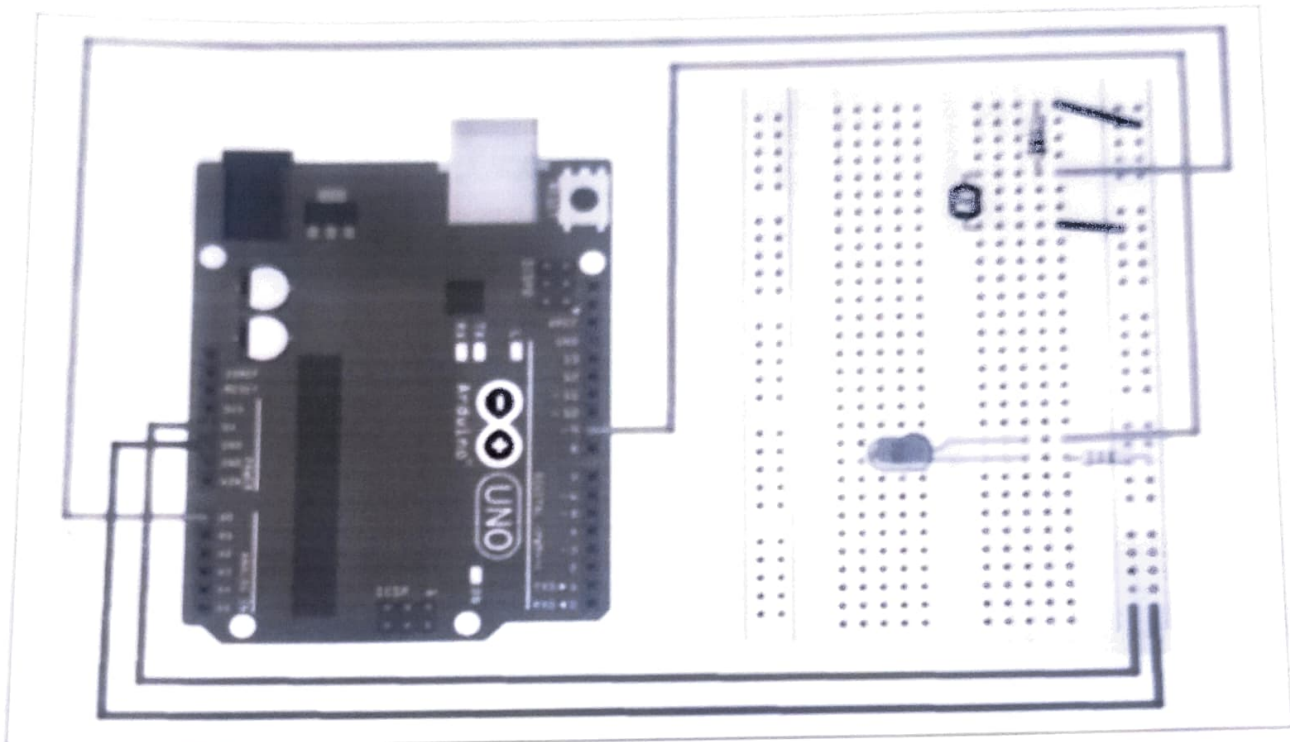
Hardware Required:

Component Name	Quantity
Arduino UNO	1
LED	1
Photo Resistor	1
10KΩ Resistor	1
220Ω Resistor	1

USB Cable	1
Breadboard	1
Jumper wires	several

Connection diagram:

Steps of working

1. Insert the photo resistor into your breadboard and connect its pin to the analog pin A0 and the remaining pin to supply on the breadboard.

2. Insert the LED into the breadboard. Attach the positive leg (the longer leg) to pin 9 of the Arduino via the 220-ohm resistor, and the negative leg to GND.

3. Insert the 10K-ohm resistor
4. Upload the code
5. Turn the photo resistor to ON the LED
6. Observe the changes in the state of the LED.

The Sketch

This sketch works by setting pin A0 as for the photo sensor and pin 9 as an OUTPUT to power the LED. After that the run a loop that continually reads the value from the photo resistor and sends that value as voltage to the LED. The LED will vary accordingly.

```
/***************Photo Resistor to LED*****/
const int sensorPin = A0; // choose the pin for the Photo resistor
const int ledPin = 9;   // choose the pin for a LED
int lightCal;   // variable for reading the initial state of photo sensor
int lightVal;   // variable for reading the current state photo sensor
void setup()
{
pinMode(ledPin, OUTPUT);  // declare LED as output
lightCal = analogRead(sensorPin);

}
void loop() {
lightVal =analogRead(sensorPin); // read input value
if(lightVal < lightCal-50) { // check if the input is less than threshold
digitalWrite(9,HIGH);   // turn LED ON}
else { digitalWrite(9, LOW); // turn LED OFF

}

}
```