

**Al-Mustaqbal University**  
**College Of Engineering & Technology**  
**Department of Computer Engineering Techniques**  
**(Stage: 3)**  
**Digital Control**  
**Lecture 8**  
**Arduino programming**  
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**Arduino – LDR (Light-Dependent Resistor)**

*This tutorial explains concept and how to use LDR (Light Dependent Resistor) with Arduino. An example is included in which a LED is controlled on the basis of LDR.*

**LDR:**

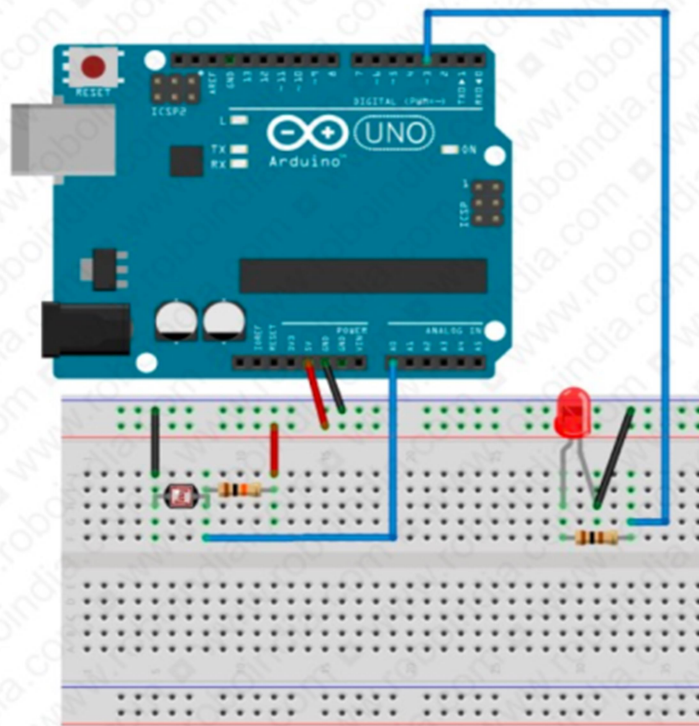
A LDR (Light Dependent Resistor) or a photo resistor is a photo conductive sensor. It is a variable resistor and changes its resistance in a proportion to the light exposed to it. It's resistance decreases with the intensity of light.

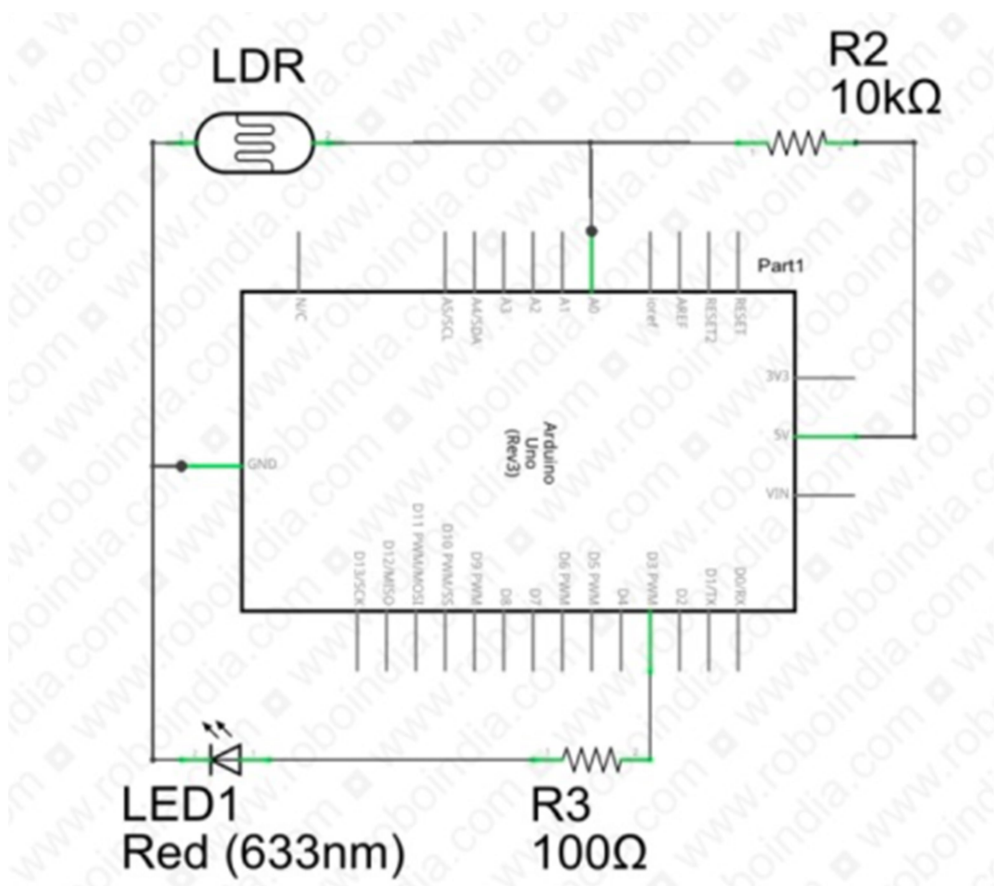
***Required Hardware***

Following Hardware will be required to perform this LDR circuit.

S.No.	Item	Quantity
1.	<b>R-Board with FTDI or Arduino Board</b>	1
2.	<b>Bread Board</b>	1
3.	<b>Male to male Jumpers</b>	7
4.	<b>Indicator LED</b>	1
5.	<b>100 OHM Resistance&amp;10 K Resistance</b>	11
6.	<b>LDR</b>	1

LDR is connected to a 10 Resistance in series. +5 Voltage is applied to this arrangement. As the light intensity changes LDR value changes thus the voltage drop on LDR will change and we are going to measure that voltage change.





### ***Programming:***

Once we are done with circuit part, here is our program to this circuit. Every command of the following program is explained in the comment section. A few point to consider for this sketch.

1. It reads LDR value and prints them on Serial monitor. Once you upload this programme to your Arduino board open serial monitor and observe how values are changing with the change of Light intensity.
2. The attached LED glows in analog mode according to the LDR Values.
3. There is a condition of threshold; The attached LED remains OFF for all the values below Threshold limit. You can set your own threshold limit. In this program we have given 800 as threshold. You can set t threshold to any value between 0 and 1023.

```

int LDR = A0;           // LDR input at A0 pin.
int LED = 3;           // LED is connected to PWM Pin 3.
int LDRReading = 0;    // to store input value of LDR
int LEDBrightness = 0; // to store the value of LED Brightness
int threshold_val = 800; // Check your threshold and modify it.
void setup()
{
  Serial.begin(9600); // initializing serial communication.
  pinMode(LED, OUTPUT); // Defining LED pin as output.
}
void loop()
{
  LDRReading = analogRead(LDR); // Reading LDR Input.
  Serial.println(LDRReading); // Printing LDR input value.
  if (LDRReading > threshold_val) // Condition to make LED ON.
  {
    // Converting LDR to LED Brightness.
    LEDBrightness = map(LDRReading, 0, 1023, 0, 255);
    analogWrite(LED, LEDBrightness); // Writing Brightness to LED.
  }
  Else
  {
    analogWrite(LED, 0); // If LDR is below threshold make LED OFF.
  }
  delay(300); // delay to make output readable on serial monitor.
}

```

