# ARDUINO COURSE GUIDE

What are Sensors?

Sensors are sophisticated devices that are frequently used to detect and respond to electrical or optical signals. A **Sensor** converts the physical parameter (for example: temperature, blood pressure, humidity, speed, etc.) into a signal which can be measured electrically.

1. Light Dependent Resistor (LDR):

The LDR is a special type of resistor which allows a lower voltage to pass through it (high resistance) whenever its dark and higher voltages to pass (low resistance) whenever there is a high intensity of light. The resistance of a photoresistor decreases with increasing incident light intensity

DARK = High Resistance → Lower Voltage
**LIGHT= Low Resistance → Higher Voltage**
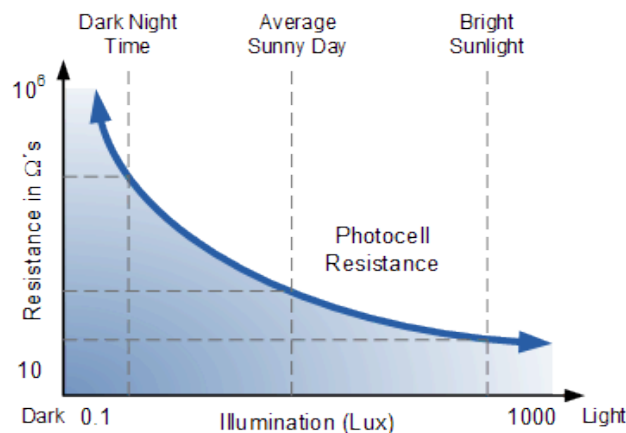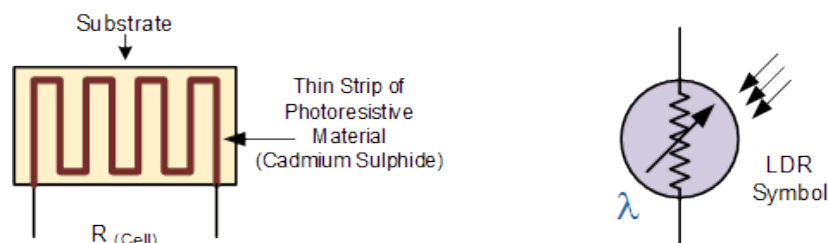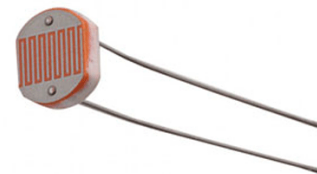
HOW IT WORKS:

Light Dependent Resistors (**LDR**) are also called photoresistors. They are made of high resistance semiconductor material. When light hits the device, then the material conductivity reduces and the photons give electrons energy. This makes them jump into the conductive band and thereby conduct **electricity**.

1. Automatic LED ON/OFF with Light/Shadow Detection

Components:

- Arduino Uno
- USB cable
- Breadboard
- LED
- LDR
- 10k Resistor (Color Code: Brown Black Orange Gold)
- 220 Ohm Resistor (Color Code: Red Red Brown Gold)
- Jumper wires
  Operating Voltage: 3.3 volts

Circuit Diagram:
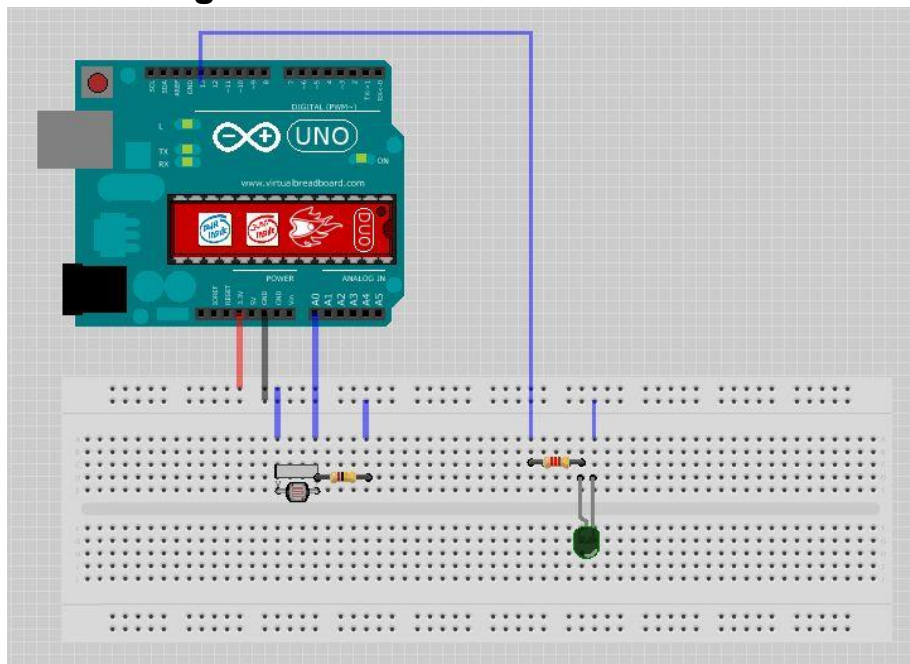
Code:

```
const int ledPin = 13;

const int ldrPin = A0;

void setup()

{

Serial.begin(9600);

pinMode(ledPin, OUTPUT);

pinMode(ldrPin, INPUT);

}

void loop()

{

int ldrStatus = analogRead(ldrPin);

if (ldrStatus <= 200) {

digitalWrite(ledPin, HIGH);

Serial.print("Its DARK, Turn on the LED : ");

Serial.println(ldrStatus);

} else {

digitalWrite(ledPin, LOW);

Serial.print("Its BRIGHT, Turn off the LED : ");

Serial.println(ldrStatus);

} }
```