



TITLE: AUTOMATIC LIGHT

LEARNING SCENARIO

School:	Duration (minutes):	40
Teacher:	Students age:	12 -13

Essential Question:

Topics:

- Arduino Programming Card and Block coding (Mblock)

Aims:

- They will make the automatic light according to light intensity.

Outcomes:

- They will use sensors with Analog pins
- They will control Leds according to data come from sensor.
- They will code Arduino with Mblock.
- They will use conditional Code (IF)
- They will use loop Mblock Code.
- They will read data come from sensor with Mblock Code.

Work forms:

- Work in pairs

Methods:

Presentation and Project based Learning

ARTICULATION

Course of action (duration, minutes)

INTRODUCTION

Talk about the final project:

We will make an automatic light works according to light intensity. It will turn on when light of environment decrease and it will turn off when light of environment increase.



MAIN PART

- Give information about LDR

What is LDR?

It stands for Light Dependent Resistor or Photoresistor, which is a passive electronic component, basically a resistor which has a resistance that varies depending of the light intensity.

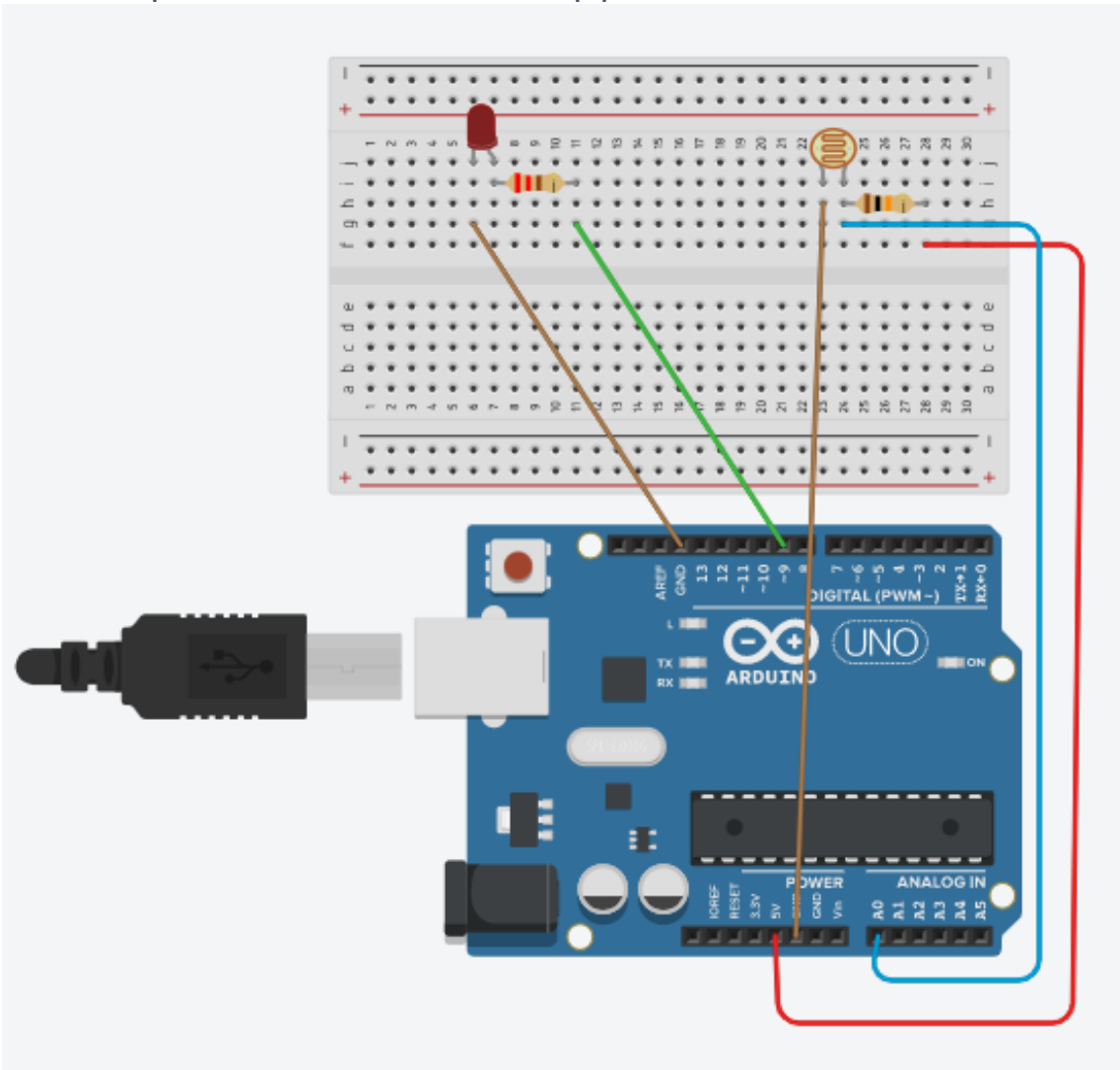
How is it Works?

The resistance is very high in darkness, almost high as $1M\Omega$ but when there is light that falls on the LDR, the resistance is falling down to a few $K\Omega$ ($10-20k\Omega$ @ 10 lux, $2-4k\Omega$ @ 100 lux) depending on the model.

- Remind the analog pins

The ATmega controllers used for the Arduino contain an onboard 6 channel (8 channels on the Mini and Nano, 16 on the Mega) analog-to-digital (A/D) converter. The converter has 10 bit resolution, returning integers from 0 to 1023. While the main function of the analog pins for most Arduino users is to read analog sensors, the analog pins also have all the functionality of general purpose input/output (GPIO) pins (the same as digital pins 0 - 13).

- **Let's make automatic Light**
- **Set up this circuit with Arduino and other equipment**





- Open Mblock and connect the Arduino
- Write this code:

```

when clicked
  forever
    set LDR to read analog pin (A) 0
    if LDR < 300 then
      set digital pin 9 output as HIGH
    else
      set digital pin 9 output as LOW
  
```

Video:

<https://youtu.be/xrCGCbI0xuE>

CONCLUSION

We read the data come from analog pins and we used these data as conditions for another equipment's working.

Methods

presentation
 talk
 work on the text
 graphic work
 interactive exercise /simulation on the computer

Work forms

individual work
 work in pairs
 group work
 frontal work

Material

- Arduino and USB connection Cable
- Computer
- Led
- LDR
- BreadBoard
- 330 ohms Resistor
- 10K ohm Resistor
- jumper Cables

Literature



PERSONAL OBSERVATIONS, COMMENTS AND NOTES