Experiment Title: (AUTOMATIC NIGHT LAMP BY ARDUINO)

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D.O.P – 8 MAY 2021

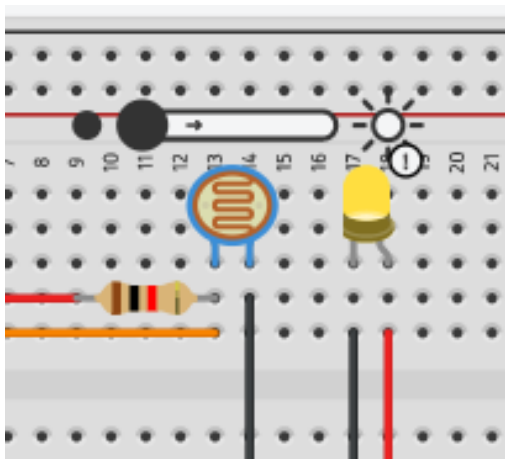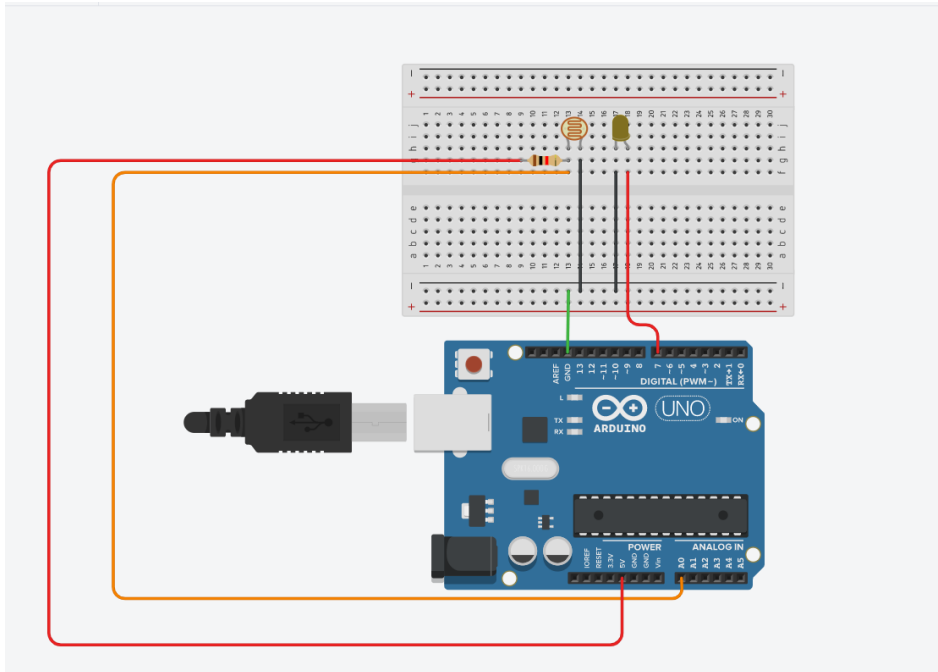## Aim:

Design automatic night lamp using arduino.

Apparatus:

1. ARDUINO
2. LDR
3. Resistance 10k ohm
4. wires, Breadboard

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Circuit Diagram:

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PROGRAM CODE:

```
void setup()

{

Serial.begin (9600);

pinMode(7,OUTPUT);

}

void loop()

{

int c = analogRead(A0);

Serial.println(c);

if (c<=850)

{

digitalWrite(7,LOW);

}

else

{

digitalWrite(7,HIGH);

}

}
```

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Theory

Introduction to LED

LED is a pn-junction diode that mainly used as a replacement of incandescent lights. It is based on the electroluminescence effect - A process where diode converts electric current to light when electrons change their state inside the LED semiconductors.

Light-emitting diodes (LEDs) are promising lighting sources for general lighting applications with the promise of being more than ten times as efficient as incandescent lighting.

The pn-junction is nothing but a combination of both N-type and P-type semiconductor materials. The material forming the junction diode is not identical to other mainstream didoes, as it comes with a transparent package, allowing the infrared and visible light to pass through the junction.

Introduction to LDR (light dependent resistor)

A photoresistor or light dependent resistor is a component that is sensitive to light. When light falls upon it then the resistance changes. Values of the resistance of the LDR may change over many orders of magnitude the value of the resistance falling as the level of light increases.

It is not uncommon for the values of resistance of an LDR or photoresistor to be several megohms in darkness and then to fall to a few hundred ohms in bright light.

With such a wide variation in resistance, LDRs are easy to use and there are many LDR circuits available. The sensitivity of light dependent resistors or photoresistors also varies with the wavelength of the incident light.

LDRs are made from semiconductor materials to enable them to have their light sensitive properties. Many materials can be used, but one popular material for these photoresistors is cadmium sulphide and CdS,
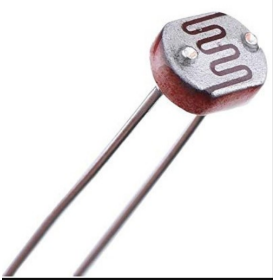
Although a semiconductor material is used for these photoresistors, they are purely passive devices because they do not possess a PN junction, and this separates them from other photodetectors like photodiodes and phototransistors.

Result

Designing of automatic night lamp was verified after uploading the program.

Learning outcomes

From this experiment students will be able to

•Identify the intensity of LED light.

•Design the circuit using arduino uno.

•Verify circuit using programming.

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EVALUATION GRID:

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Worksheet completion including writing learning objectives/Outcomes.(To be submitted at the end of the day).		10
2.	Post Lab Quiz Result.		5
3.	Student Engagement in Simulation/Demonstration/Performance and Controls/Pre-Lab Questions.		5
	Signature of Faculty (with Date):	Total Marks Obtained:	

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