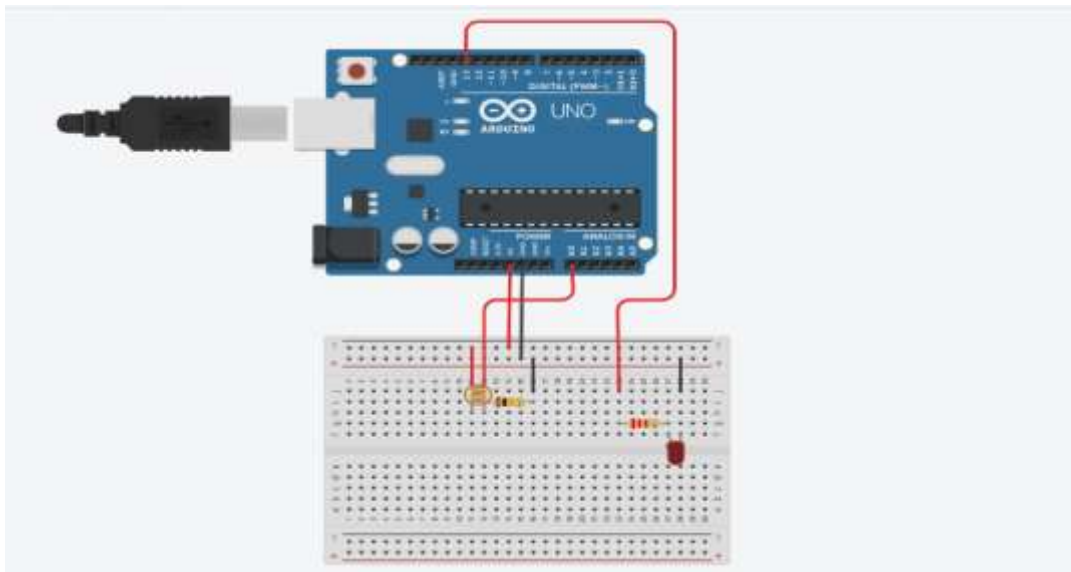


Exp 4:- Design an automatic night lamp.

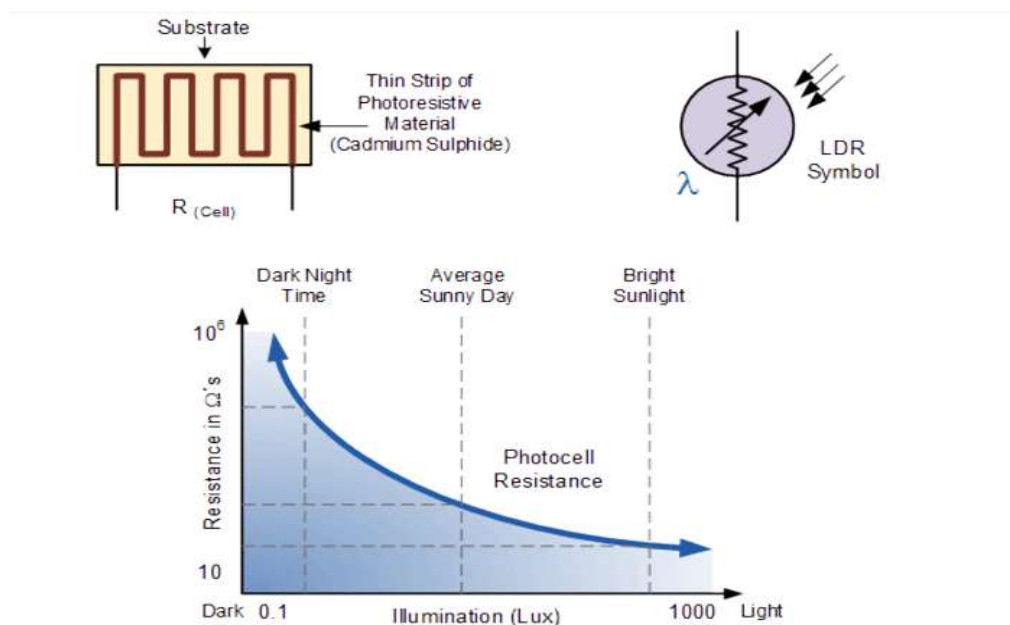
Circuit Diagram:-



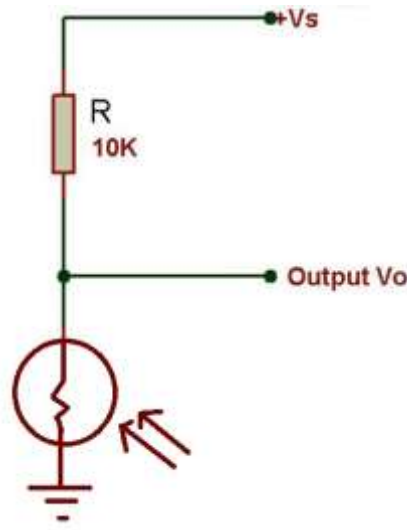
Theory: -

Concept used:-

- The Arduino board can supply a power of 5V as digital output signals through the 14 pins (namely 0-13) present in it as digital input or output pins. The GND pin of the Arduino board acts as ground (It provide 0V).



- LDR is a special type of resistor which allows a low voltage to pass through to it whenever it's dark and higher voltage to pass whenever there is high intensity of light.



- A $10K$ resistor is used along with LDR to create a voltage divider circuit. The varying resistance of the LDR is converted into varying voltage that is passed to analog Pin (A0) of the Arduino.

Learning and Observation: -

Learnings:

- Learned how to create a voltage divider.
- Learned how to use varying resistance to create varying voltage.
- Learned how to use LDR to make an automatic night lamp.

Observations:-

- When the code is uploaded to the Arduino board it worked accordingly i.e. whenever the intensity of light is less than 800 Lamp automatically turned on

Problem and Troubleshooting:-

- The code was not uploading to the Arduino because of the wrong port selection. Make sure to choose the correct port just after connecting Arduino with the PC.
- Problem in compilation due to syntax error. So make sure to write the correct code
- Problem in sketching i.e. code uploading due to problem in Arduino IDE. If this problem is encountered start the IDE again.
- LDR was not working. Use multimeter to check the continuity of the LDR.
- LED was not working. Use multimeter to check that LED is not fused.
- Make sure negative terminal of the LED is connected to ground

Precautions:-

- Make sure the circuit is closed
- The connections at different points should not be loose and the pins should be inserted properly.
- Don't use LED's directly use a resistor so LED doesn't get fused.

Learning Outcomes:-

- I have learned how to make and use a voltage divider.
- I have learned how to use varying resistance of LDR to create varying voltage with the help of voltage divider.
- Through this experiment I have gained the skill of making a circuit using different hardware and controlling the functions done by that circuit with the help of codes.
- I have learned how to make a automatic lamp using Arduino.
- Learned how to use if/else statement to make tweaks in LED's.