

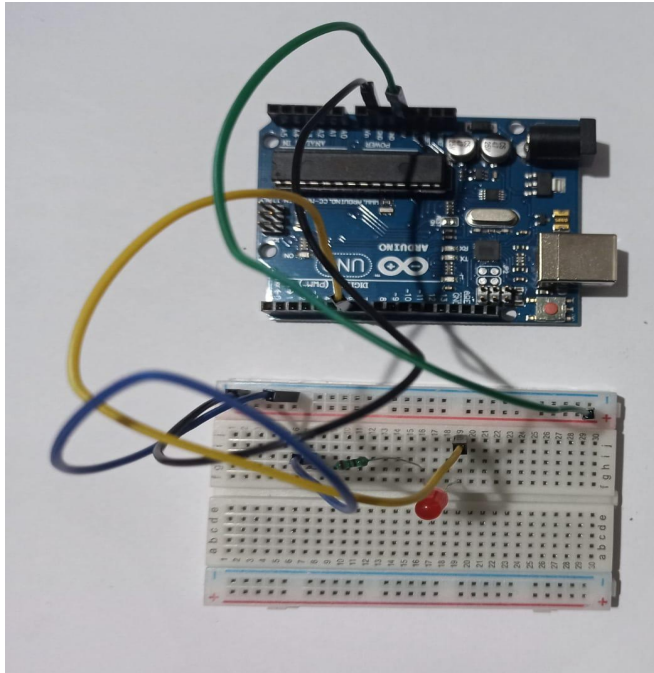


# Data Transmission using LED light and LDR

- Our aim in this project is to transmit data through LED lights using Arduino.
- Li-Fi is becoming increasingly popular way of transmitting data across the distances as it is very efficient and fast.
- We will make a project using which we will see how Li-Fi works.

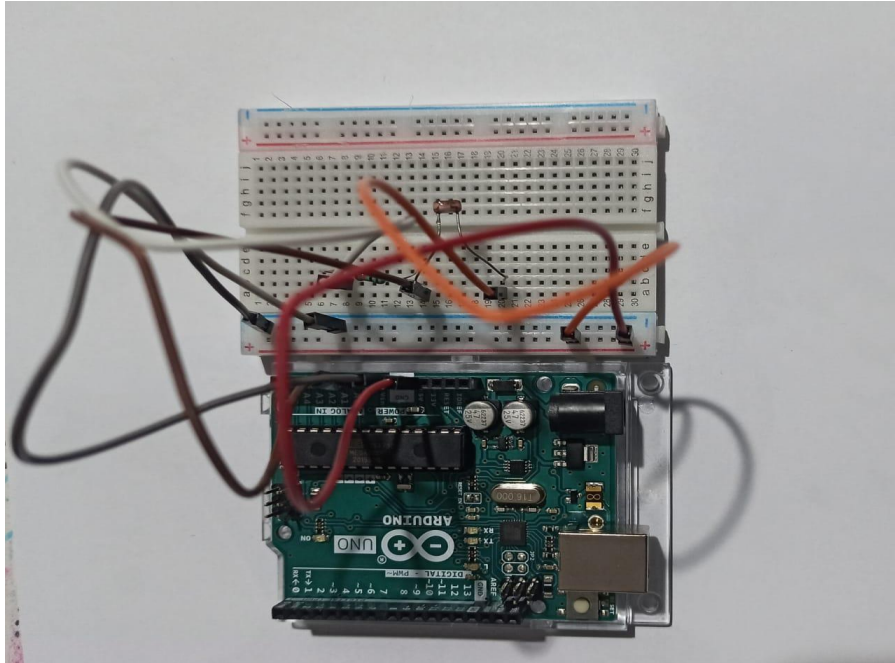
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# Circuit Design of Transmitter



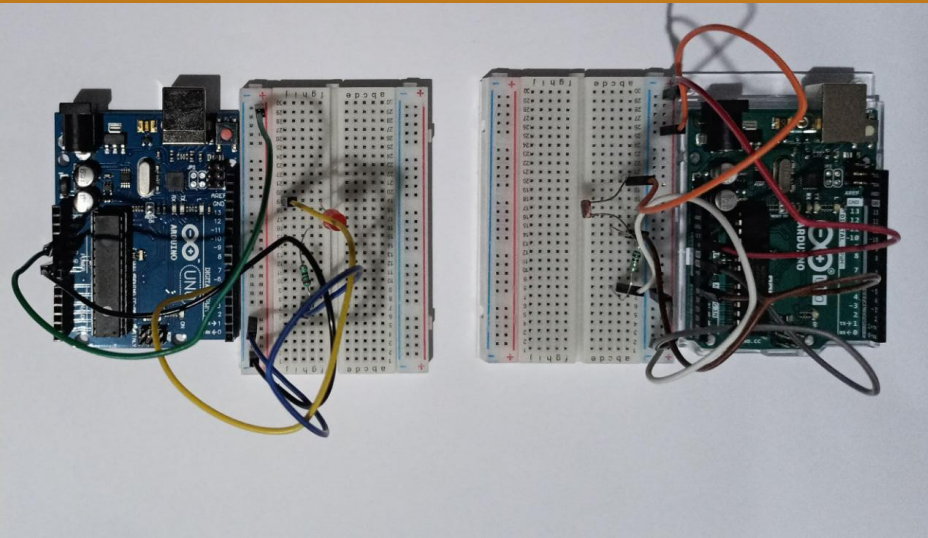
- Arduino board that we used is the Arduino UNO.
- Resistor used was of 220 ohms as it would save LED from high voltage and also allow LED to blink.
- We will be using pulse width modulation to transmit data using LED.

# Circuit of Receiver



- LDR works as it decreases resistance with respect to receiving luminosity (light) on the component's sensitive surface.
- When the light level decreases, the resistance of the **LDR** increases. As this resistance increases in relation to the other **resistors**, which has a fixed resistance and it causes the voltage dropped across the **LDR** to also increase.

# Circuit and Schematic

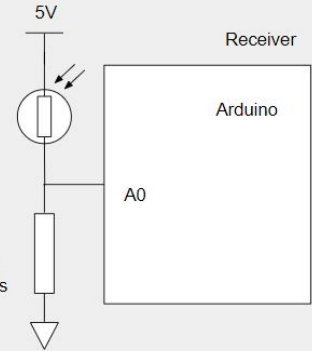


Transmitter



220  
ohms

Receiver



10k  
ohms



## Check

- Values used for thresh1 and comparison operations in get\_info() function in receiver code may need to be changed considering the background light conditions and the distance between LED and LDR.
- Make sure that background light conditions don't fluctuate while running the program as it may affect working of the system.



## **Challenges faced while building the project and How we tackled them?**

- First we had to make light in the background constant because fluctuating background light conditions would make output incorrect. So we covered transmitter and receiver circuit inside a box to minimize extra light and make background condition approximately constant.
- Second problem was to transmit two bits at a time. For that we used Pulse Width Modulation(PWM) and bit masking.



# Working

- At transmitter side, data is being sent using Serial monitor and port to arduino. Then the data is transmitted from arduino using LED.
- At receiver side, data is received using LDR and is displayed on the Serial monitor.
- For transmission of data, Pulse Width Modulation (PWM) and Bit masking are used. Using PWM, we are able to transmit two bits at a time.
- For interpreting the received data Bit masking is used.