



UNIVERSITY COLLEGE OF ENGINEERING, DINDIGUL - 624622

AUTOMATIC FAULT DETECTION IN STREET LIGHTS

BE. ELECTRONICS AND COMMUNICATIONS ENGINEERING

PROJECT GUIDE

› **Dr.S.Aiswarya,M.E.,Ph.D.,**
TF-ECE

PROJECT COORDINATOR

› **Dr.S.Sutha**
Professor, HOD i/c ECE

TEAM MEMBERS (IV-ECE)

- › **P.Prakash Raj-922320106017**
- › **T.Ramar-922320106018**
- › **S.A.Shree Aswindh-922320106024**
- › **V.Umaiorubagan-922320106030**


WELCOME TO OUR PRESENTATION





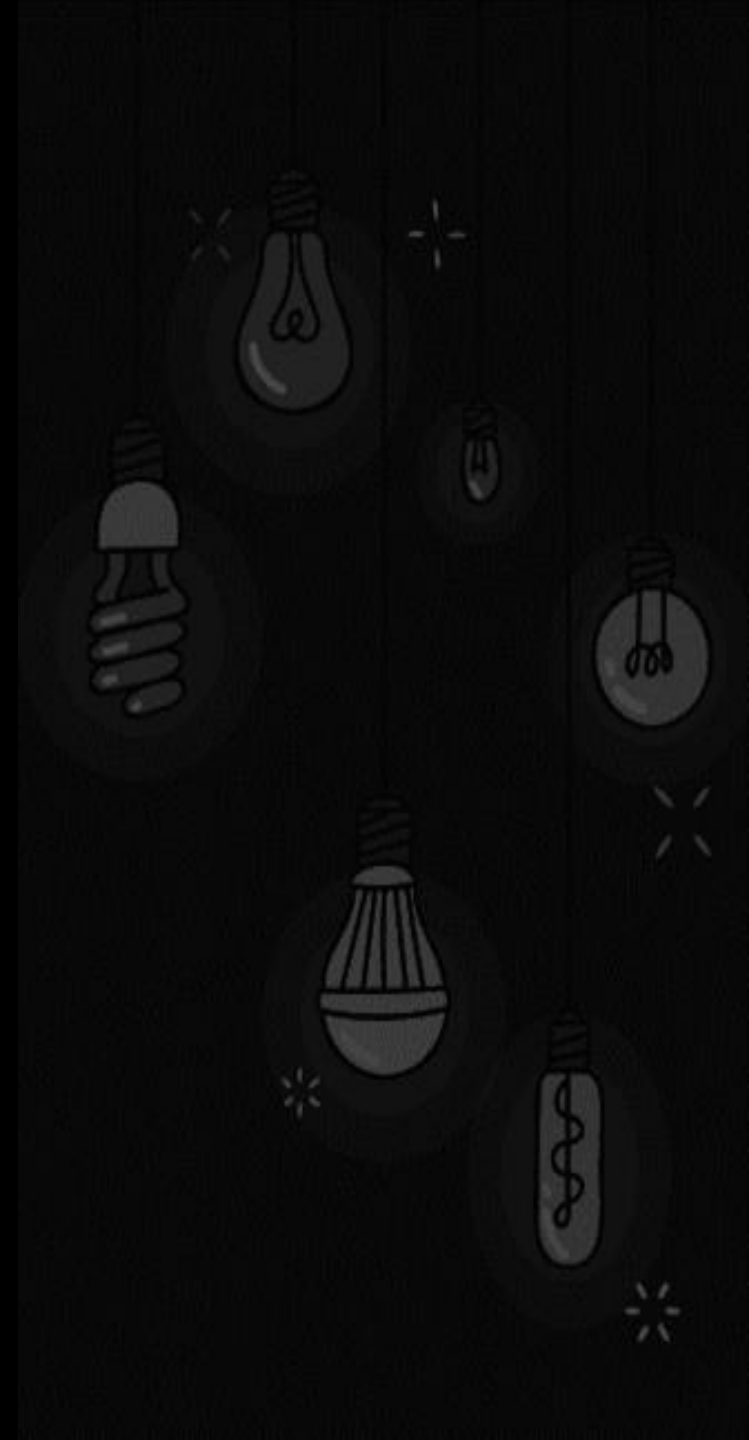
ABSTRACT

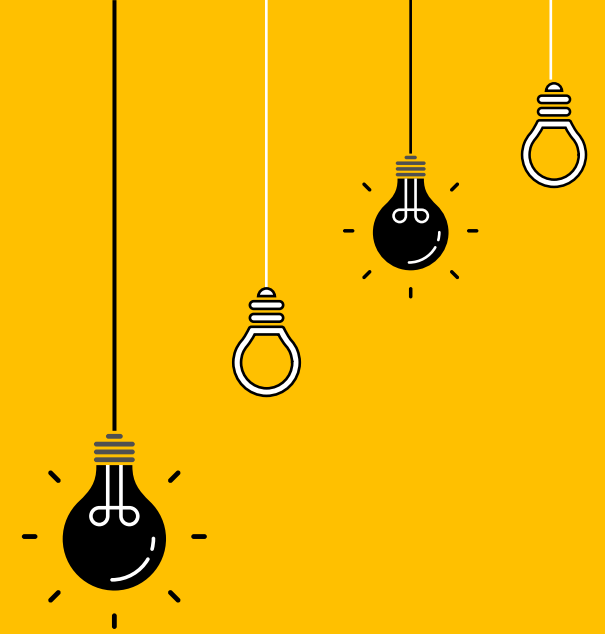
The project "Automatic Fault Detection in street lights" is all about making a system that can easily spot when there's something wrong with street lights. This helps make public places safer and ensures that the lights work reliably.



ABSTRACT

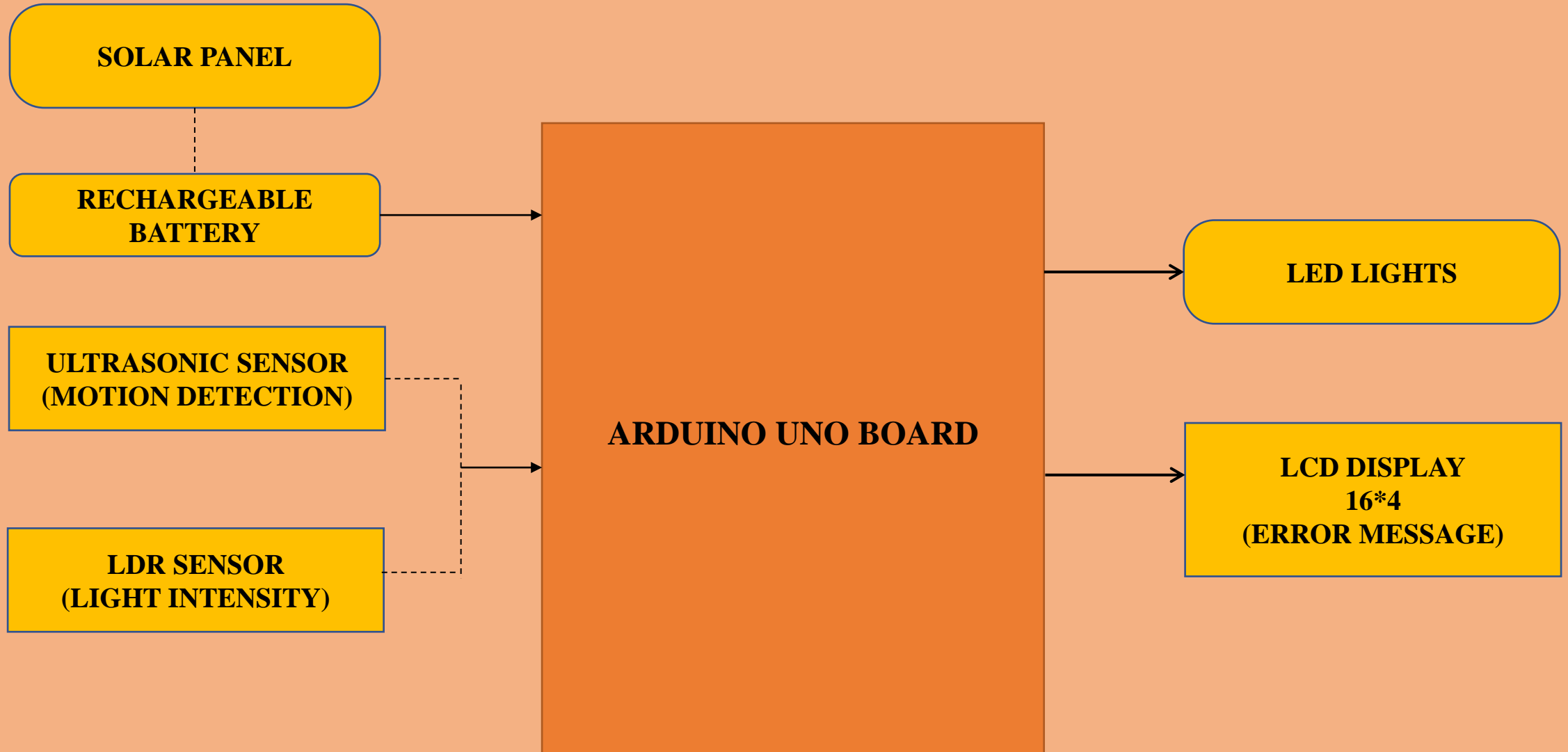
- **Solar energy is the energy that comes from the sun in the form of light and heat. It can be converted into electricity or other useful forms of energy.**
- **It reduces the energy consumption and costs of the street lighting system**
- **The project "Automatic Fault Detection in Street Light“, focuses on creating a system to quickly find problems with street lights and making public spaces safer and more reliable.**
- **Old methods of checking street lights are slow and need a lot of manual work. The solution aims to make this process faster and easier.**
- **Used components like an Arduino UNO board, LCD display, LED lights, LDR sensor, Ultrasonic sensor, Solar panel, and Battery are used.**
- **The Arduino UNO board acts as the main brain of our system.**
- **An LDR sensor is a device that used to detect the intensity of the light whether the solar light is working or not working.**
- **Ultrasonic sensor is a device that used to sense the movement of vehicles, pedestrians, or animals on the road, if there is any object comes near the ultrasonic Sensor, the light will ON. Otherwise, the light will OFF.**
- **If any fault is detected in the system, it will shows the error message on the LCD screen.**



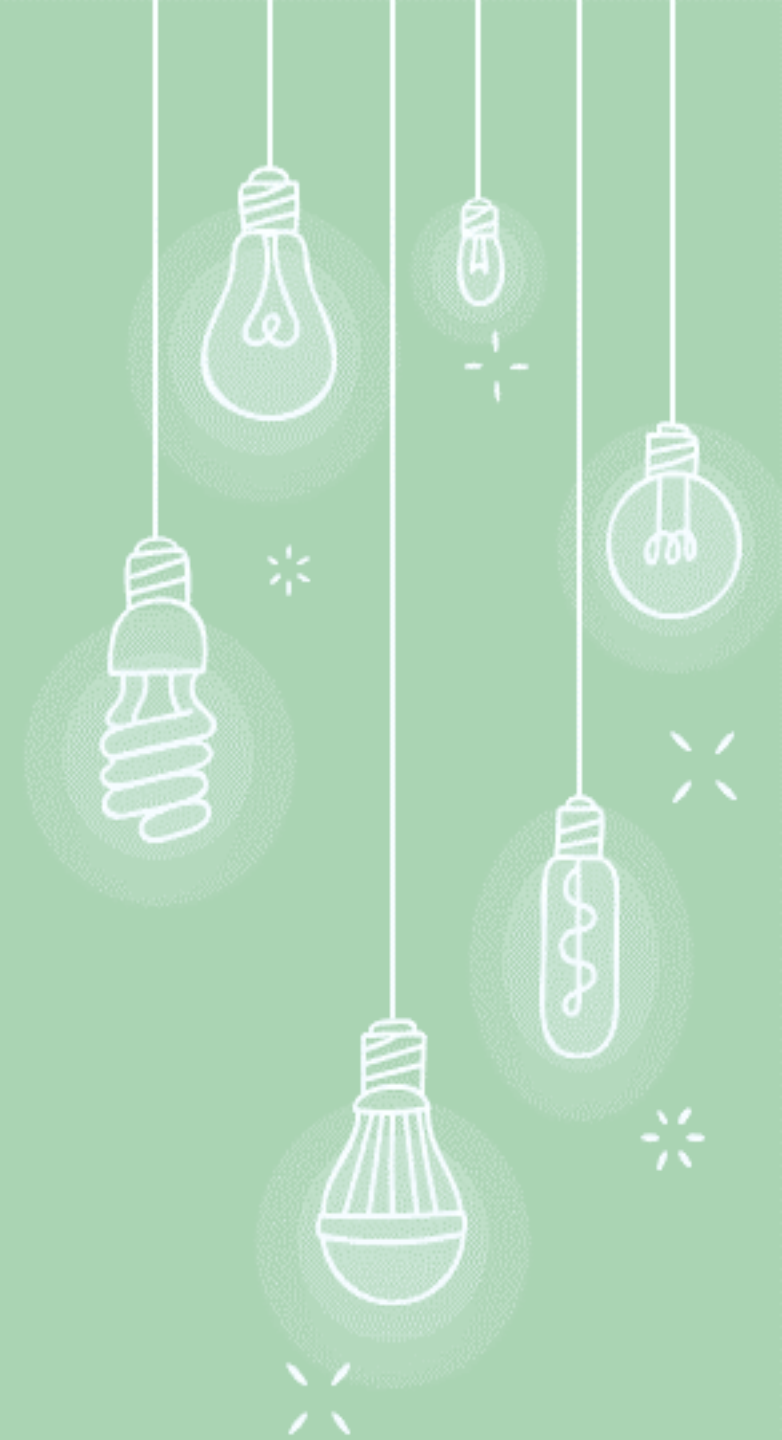


ARCHITECTURAL DESIGN

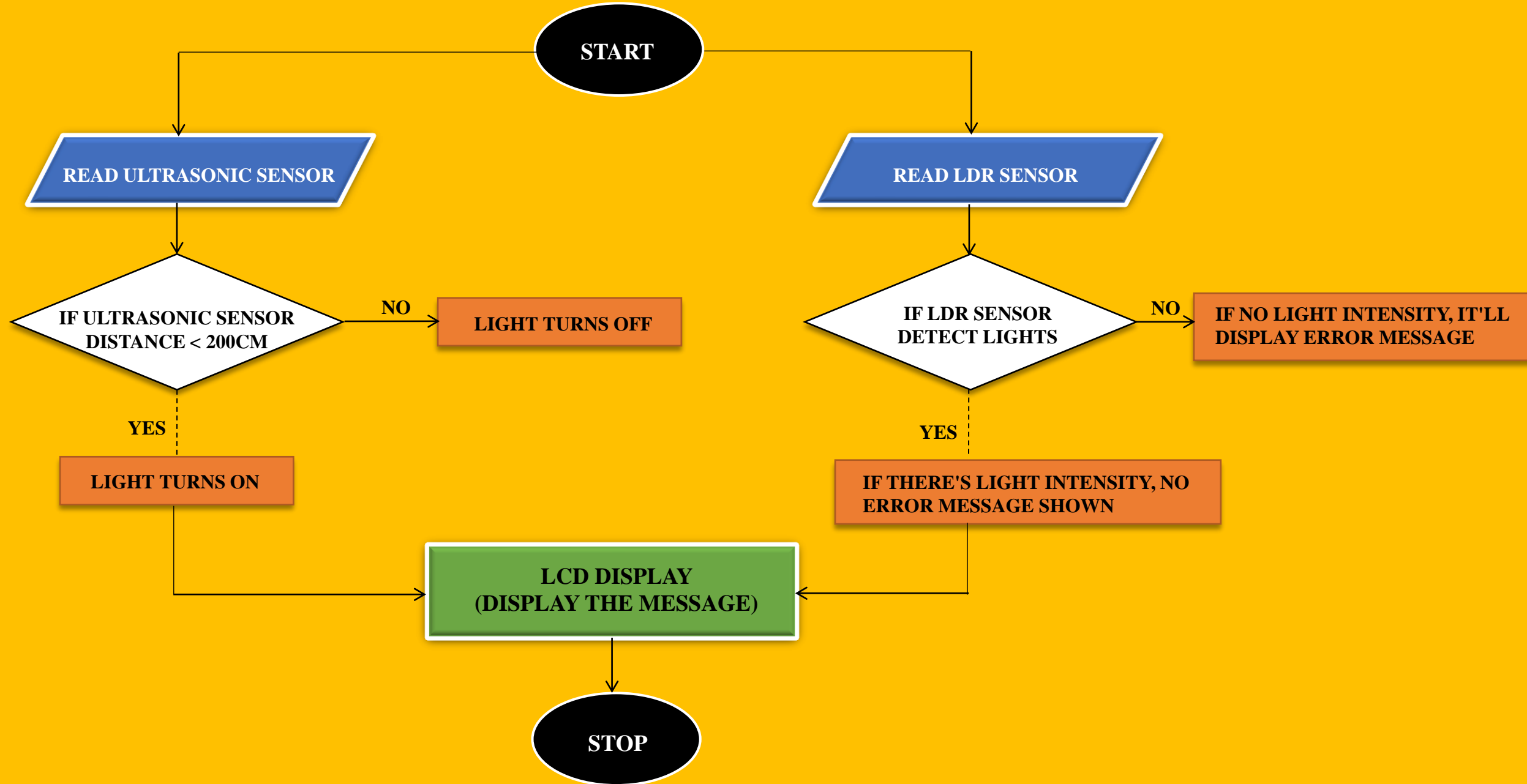
ARCHITECTURAL DESIGN

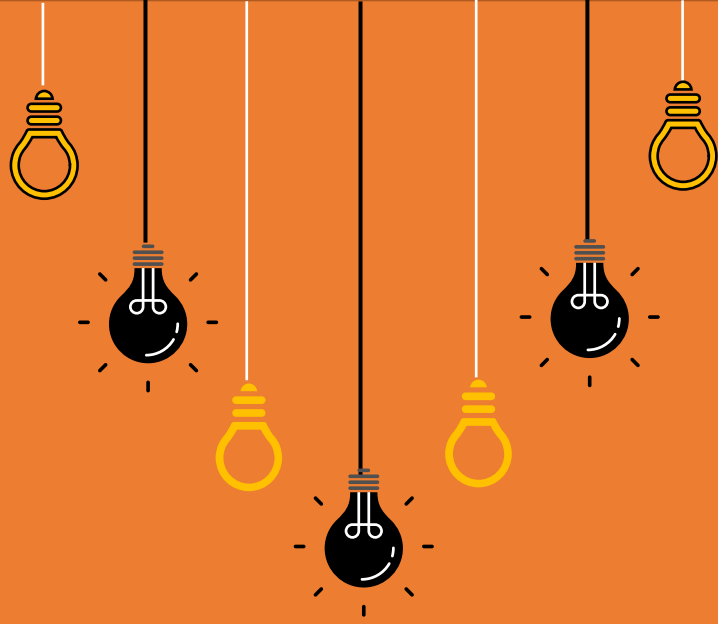


ER DIAGRAM



ER DIAGRAM





ALGORITHMS



ALGORITHMS

- **STEP 1:** Initialize the Arduino UNO board, include necessary libraries for the LCD display, ultrasonic sensor, and LDR
- **STEP 2:** Define pins for the LDR, ultrasonic sensor (trigger and echo), and LCD display.
- **STEP 3:** Set pins as INPUT/OUTPUT, initialize LCD display, print an initial message on the LCD for system startup.
- **STEP 4:** Iterate sensors, read LDR & ultrasonic, calculate distance, clear LCD, check conditions, control relays, display status on LCD, wait for 5 seconds.
- **STEP 5:** Continue checking and adjusting the lights as needed, without stopping, based on what the sensors detect.
- **STEP 6:** Display the Message in LCD display.

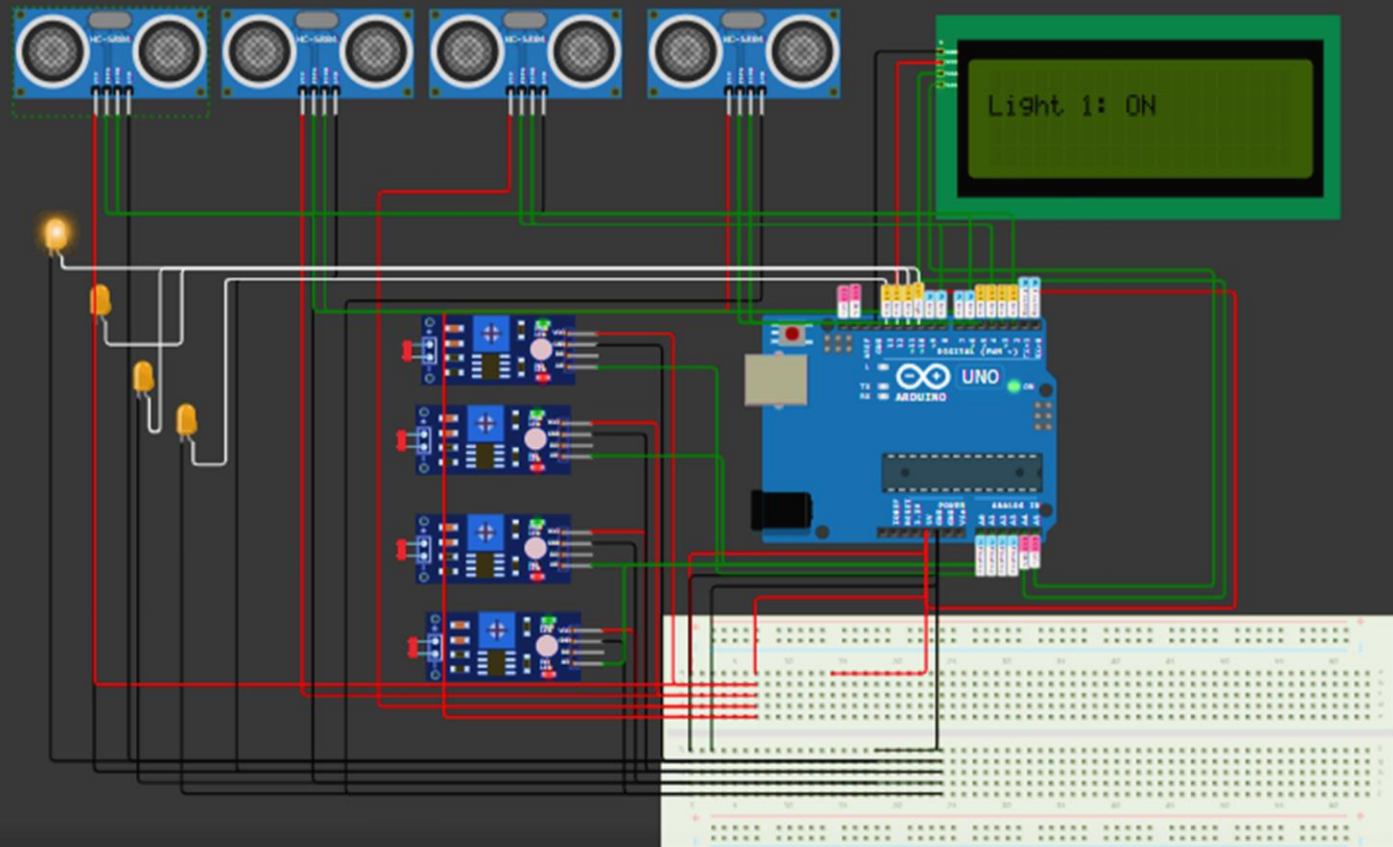
EXPECTED OUTCOMES

- If the ultrasonic sensor detects a distance of 170cm, it triggers the condition for activating "light 1." This means that when the sensor measures an object or obstruction at this distance, the programmed response is to turn **ON** "light 1."

Simulation

00:05.501 97%

Editing Ultrasonic Distance Sensor
Distance: 170cm

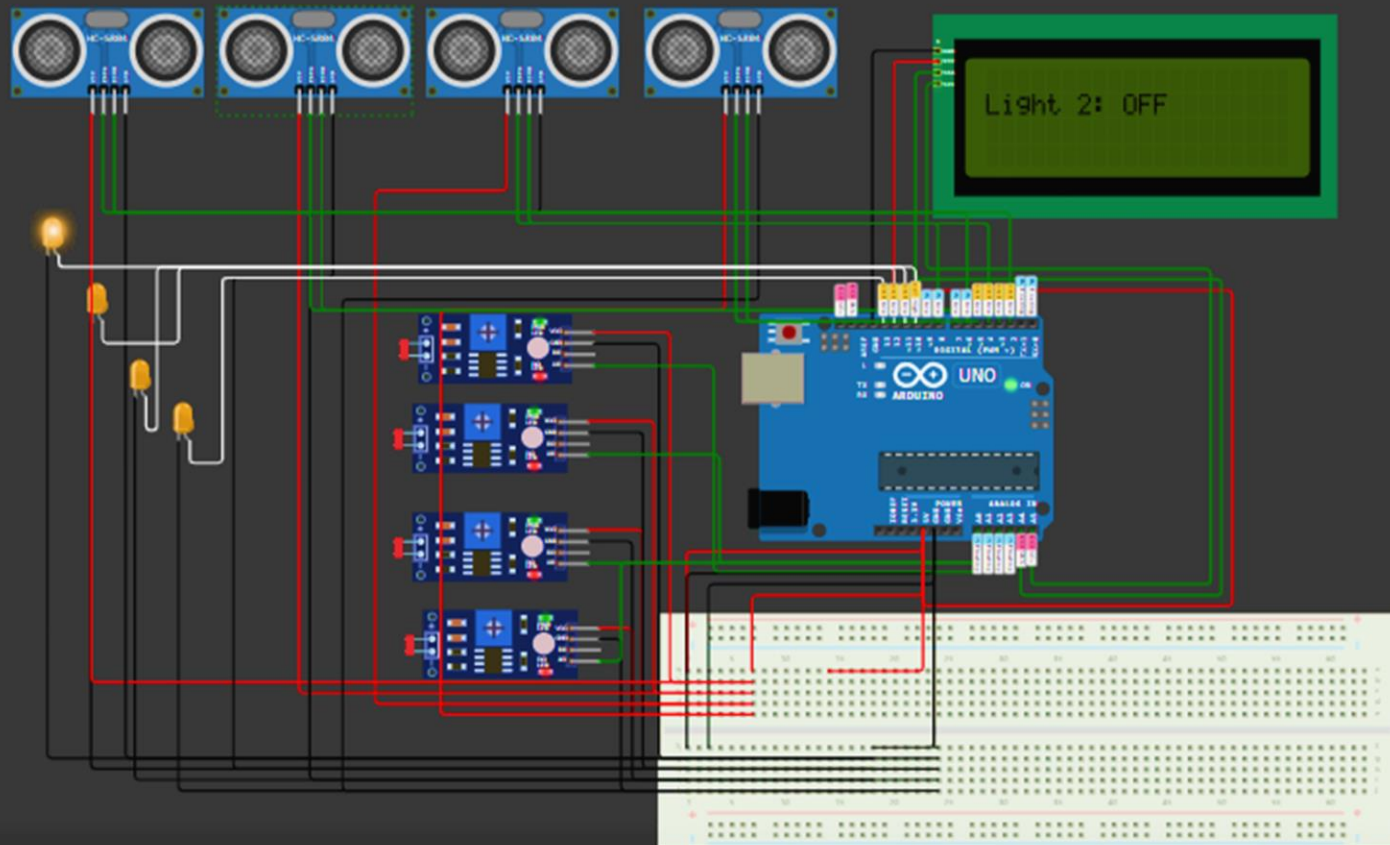


- If the ultrasonic sensor measures a distance of 201 cm, then "light 2" will be turned **OFF** "light 2" should be turned **OFF** according to the programmed conditions or logic.

Simulation

00:09.318 94%


Editing Ultrasonic Distance Sensor
Distance: 201cm

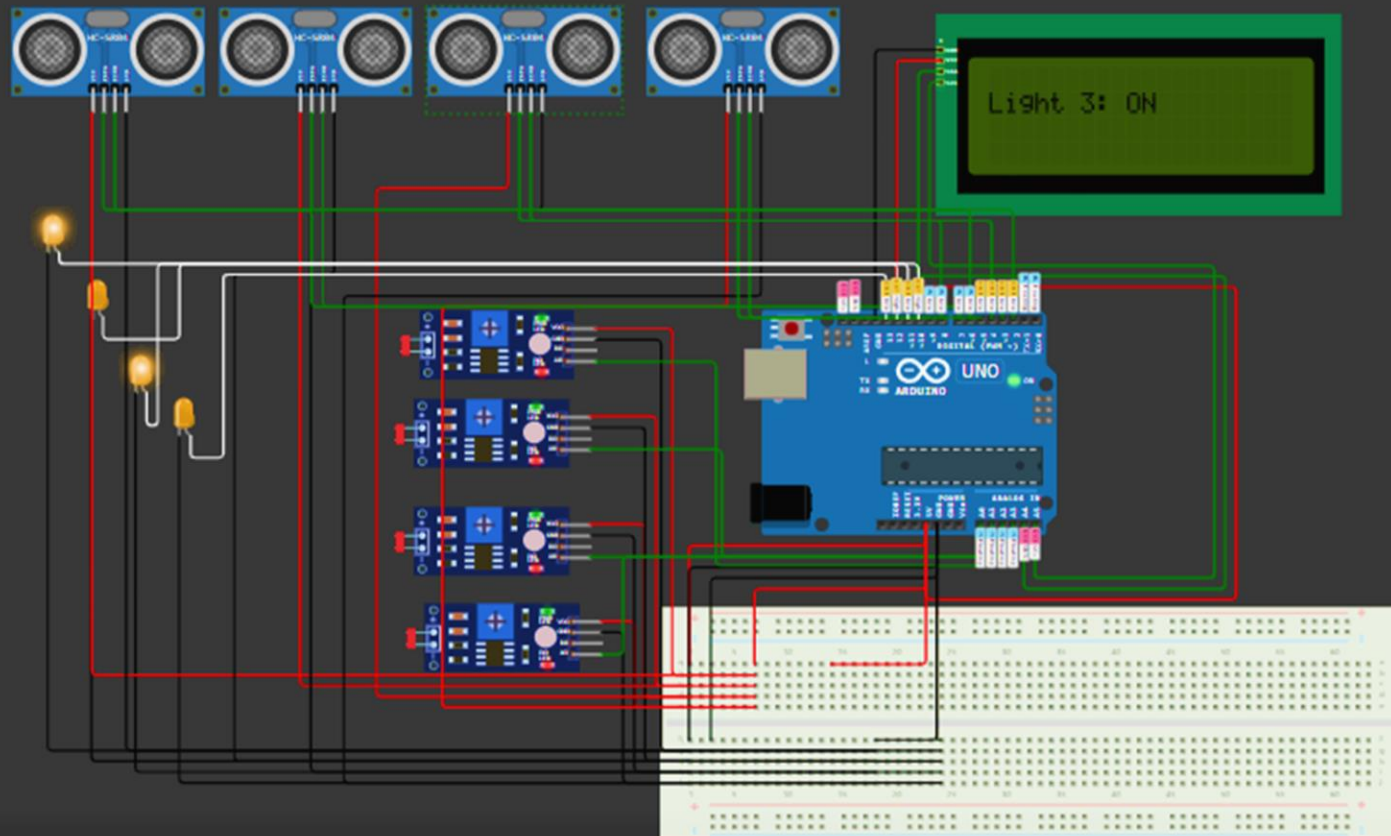


- If the ultrasonic sensor measures a distance of 200 cm, then the condition for turning **ON** "light 3" is met

Simulation

00:13.701 89%

Editing Ultrasonic Distance Sensor
Distance:  200cm

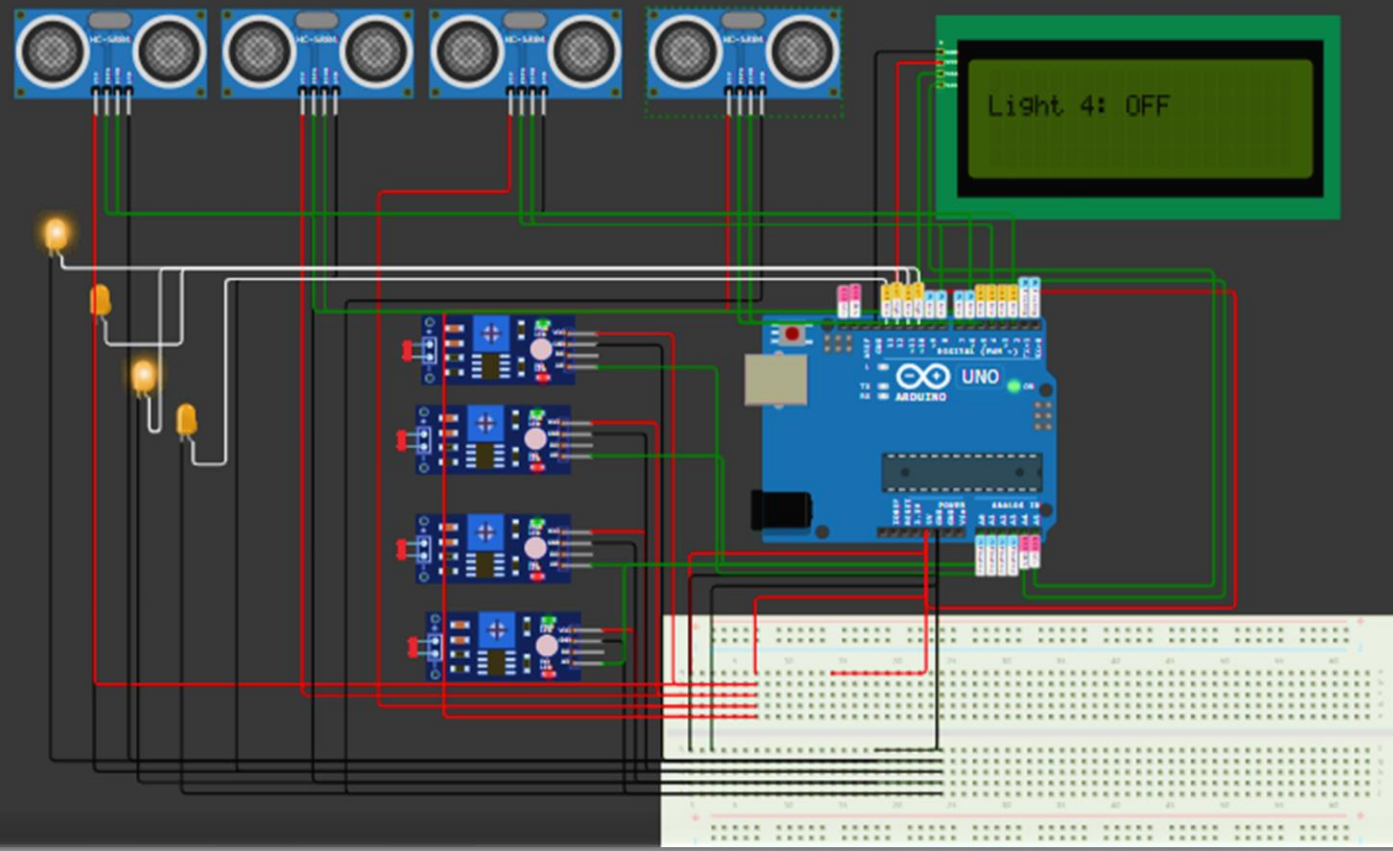


- If the ultrasonic sensor measures a distance of 220 cm, then the condition for turning **OFF** "light 4" is met. So, under this specific circumstance, "light 4" should be turned **OFF** according to the programmed conditions or logic.

Simulation

00:19.152 98%

Editing Ultrasonic Distance Sensor
Distance: 220cm





REFERENCES



REFERENCES



1

Automatic Street Light Control and Fault Detection System with Cloud Storage. (a.n.d.). International Journal of Scientific & Engineering Research, pages(1-5).

2

IoT Based Automatic Damaged Street Light Fault Detection Management System, pages(1-5).

3

Mamodiya, U., & Pahune, A. (2020). A Smart Street Light System With Auto Fault Detection. International Journal of Engineering Research and Technology, 13(7).

REFERENCES

4

National Highway Street Light Fault Detection and Monitoring System.

5

Reza Mohamaddoust , Abolfazl Toroghi Haghighat, Mohamad Javad Motahari Sharif and Niccolo AutomaticCapanni, “A Novel Design of an Lighting Control System for a Wireless Sensor Network with Increased Sensor Lifetime and Reduced Sensor Numbers”, Sensors (2011), Volume No.- 11(9), pp. 8933-8952.

6

W. Yue; S. Changhong; Z. Xianghong; Y. Wei; “Design of new intelligent street light control system ,“ 8th IEEE international Conferences on Control and Automation (ICCA), (2010) Page(s): 1423 – 1427.



THANK

YOU