IOT MINI PROJECT

PRESENTATION

Applications of Temperatue & Humidity Sensor with Ultrasonic sensor for safety

Objectives

The primary concept of our project is to transmit useful data using the below sensors, which can further be used in several applications for industrial purposes.

Temperature & Humidity

To monitor the temperature and humidity of the environment around the object and automatically switch on the fan to reduce the heat

Obstacle detection

To make the driving safe at night by detecting the obstacle the notifying the driver about the same.

About the Project

Why the need for these safety features?

In cars, engine heat may sometimes get out of control which results in getting the car components damaged therefore we are using a temperature and humidity sensor that will automatically turn on the fan when the temperature/humidity exceeds the required limit, therefore, preventing the parts from getting damaged.

At night, many times the drivers can't see the obstacles clearly, therefore, resulting in accidents and this can be prevented by using an ultrasonic sensor which will tell the distance about the obstacle beforehand by which you can avoid the obstacle and move safely

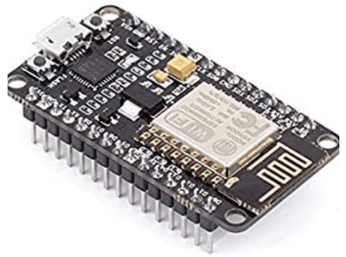
About the Project

Other areas where this can be implemented

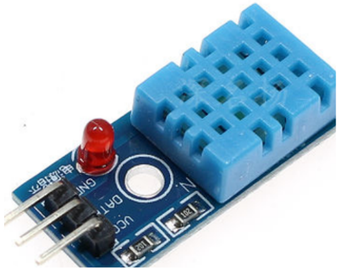
In biodiversity parks, where we can sense the temperature of the water for the fishes and control it accordingly and to make sure that they don't come near the edge or get an alert when it happens.

In volcanic areas, where we can detect the rise in heat and by ultrasonic sensor we can detect how far away is the explosion going to happen.

Components Details



Node MCU 8226



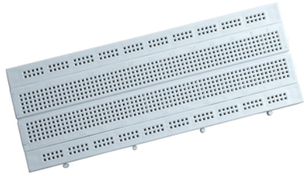
DH11:
Temperature and
Humidity sensor

HC-SR04:
Ultrasonic
sensor

Fan

LEDs

Relay



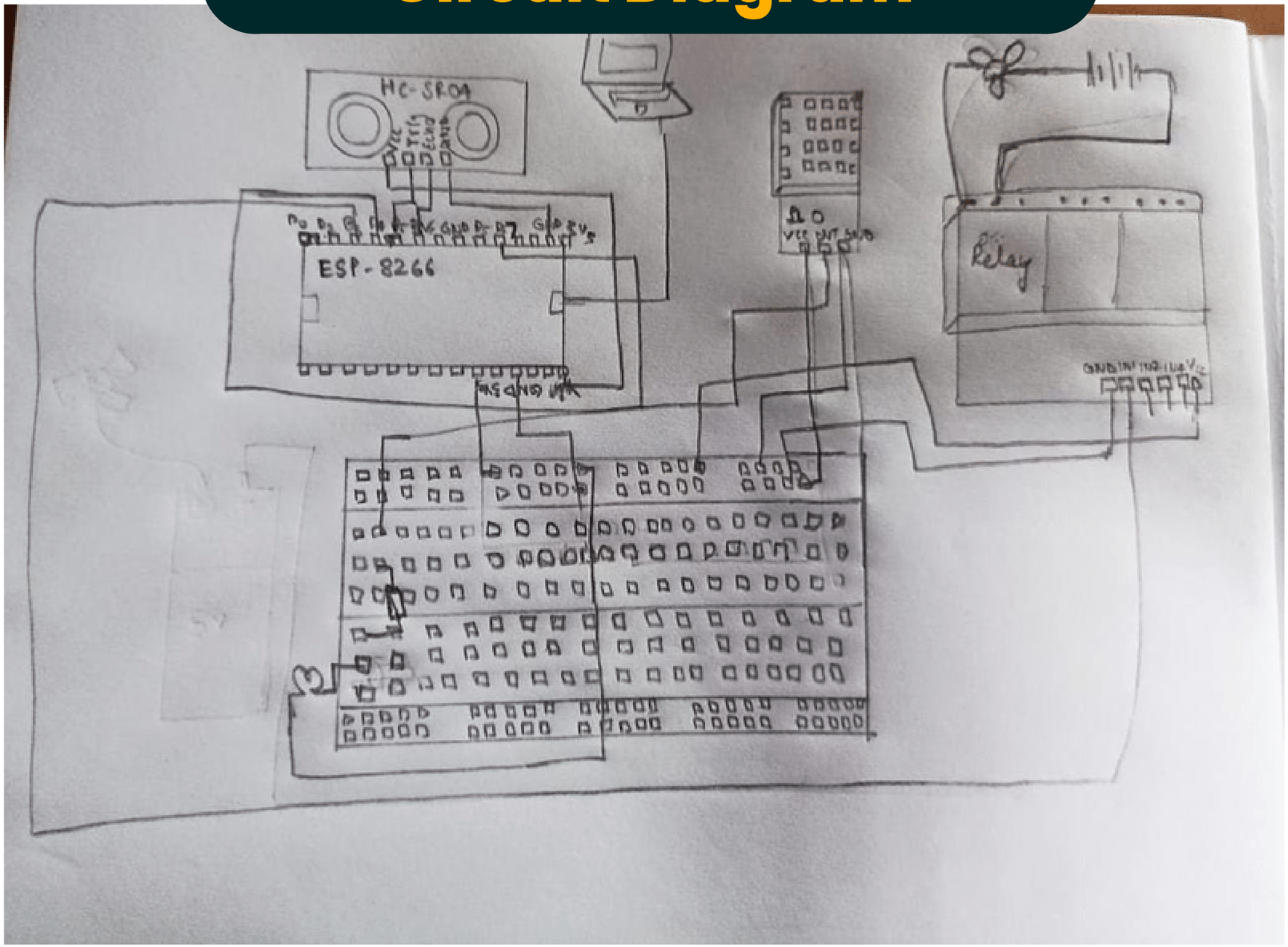
Bread Board

connecting
wires

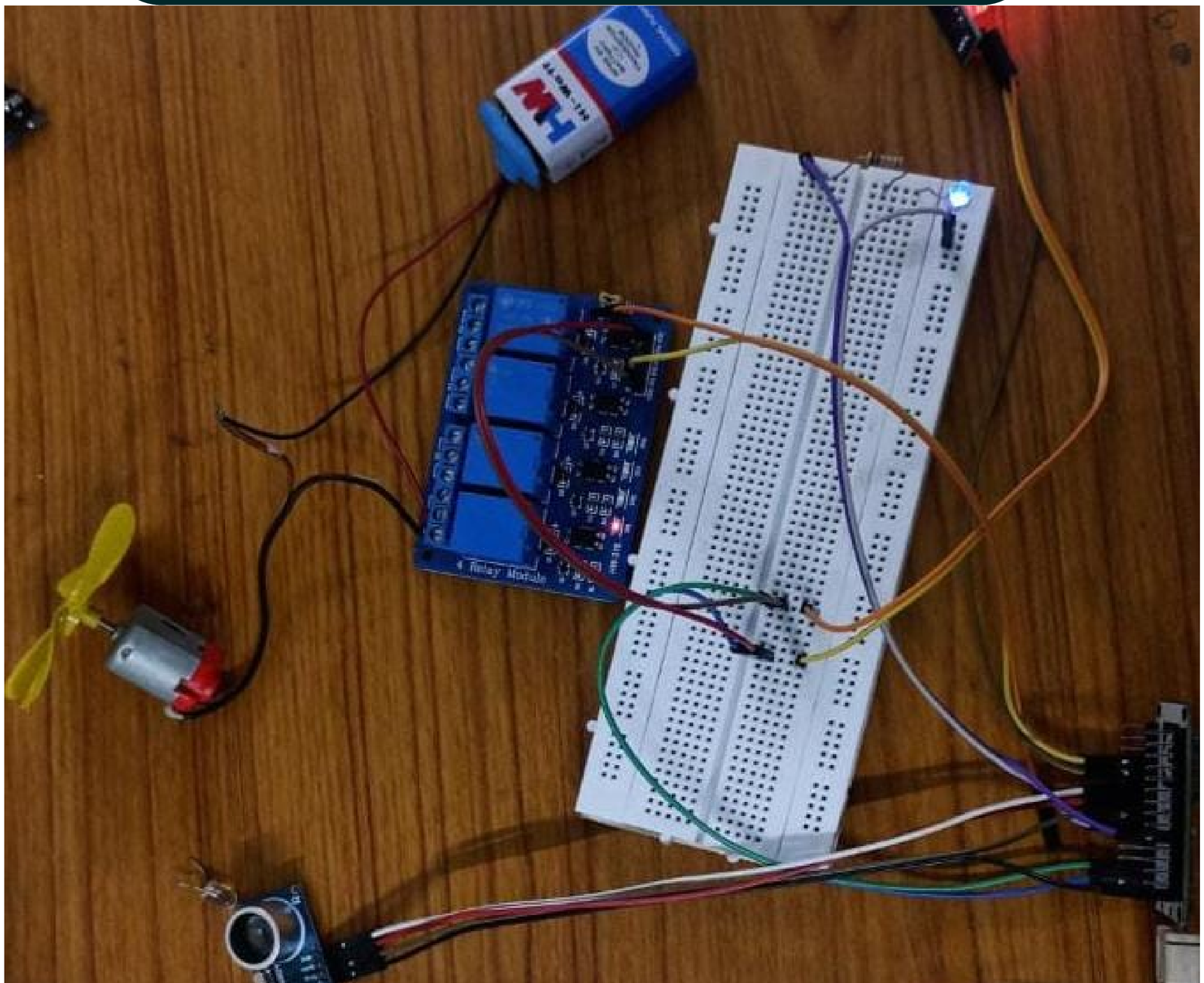
Battery

cable b-type

Circuit Diagram



The working project



programming

combined_blynk §

```
const int trigPin = 12;
const int echoPin = 14;
#include "DHT.h"        // including the library of DHT11 temperature and humidity sensor
#define DHTTYPE DHT11   // DHT 11
#define dht_dpin D4
#define fan D3
//define sound velocity in cm/uS
#define SOUND_VELOCITY 0.034
#define trigPin D6
#define ecoPin D5
#define led D7

DHT dht(dht_dpin, DHTTYPE);

long duration;
float distanceCm;


void setup() {
  dht.begin();
  Serial.begin(9600); // Starts the serial communication
  Serial.println("\n");
  pinMode(fan, OUTPUT);
  delay(700);
  pinMode(trigPin, OUTPUT); // Sets the trigPin as an Output
  pinMode(echoPin, INPUT); // Sets the echoPin as an Input
  pinMode(led, OUTPUT);
}
```

combined_blynk §

```
  pinMode(echoPin, INPUT); // Sets the echoPin as an Input
  pinMode(led, OUTPUT);


oid loop() {

    float h = dht.readHumidity();
  float t = dht.readTemperature();
  Serial.println("\n\nRealTime Humidity and temperature");
  Serial.print("temperature = ");
  Serial.print(t);
  Serial.println("C  ");
  Serial.print("Current humidity = ");
  Serial.print(h);
  Serial.println("%  ");
  if (t>=33)
  {
    digitalWrite(fan, HIGH);
  }
  if (t<33)
  {
    digitalWrite(fan, LOW);
  }

 // Clears the trigPin
 digitalWrite(trigPin, LOW);
 delayMicroseconds(2);
```

programming

```
digitalWrite(trigPin, LOW);
delayMicroseconds(2);
// Sets the trigPin on HIGH state for 10 micro seconds
digitalWrite(trigPin, HIGH);
delayMicroseconds(10);
digitalWrite(trigPin, LOW);

// Reads the echoPin, returns the sound wave travel time in microseconds
duration = pulseIn(echoPin, HIGH);
//Serial.print(duration);

// Calculate the distance
distanceCm = duration * SOUND_VELOCITY/2;



// Prints the distance on the Serial Monitor
Serial.print("Distance (cm): ");
Serial.println(distanceCm);

if(distanceCm<=100)
{
  digitalWrite(led, HIGH);
}
if(distanceCm>=101 && distanceCm<=1899)
{
  digitalWrite(led, LOW);
```

```
// Prints the distance on the Serial Monitor
Serial.print("Distance (cm): ");
Serial.println(distanceCm);

if(distanceCm<=100)
{
  digitalWrite(led, HIGH);
}
if(distanceCm>=101 && distanceCm<=1899)
{
  digitalWrite(led, LOW);
}
if(distanceCm>=1900)
{
  digitalWrite(led, HIGH);
}

delay(1000);
```

Thank You

Safety is our priority.

Harsh Bajaj(Team Leader)
Ayushi Jain(Team member)
Mohit Kushwaha (Mentor)