

LPG GAS LEAK DETECTION



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INTRODUCTION AND PURPOSE

It has become important factor nowadays to bring the technology into our home and office. By making the place smart, the day-to-day activities are becoming more and easier. This is where ‘Internet of things (IoT)’ comes into picture. As only the regular works have become smart, the things used are still the same like Gas cylinder in homes. According to the reports, over 1500 LPG accidents happen in every day. This is equivalent to the death of 1500 people including the children. Even the neighborhood is affected in a single accident. So there comes the need to bring in technology to prevent accidents. IoT is a fast-growing technology in Industries, Cars.

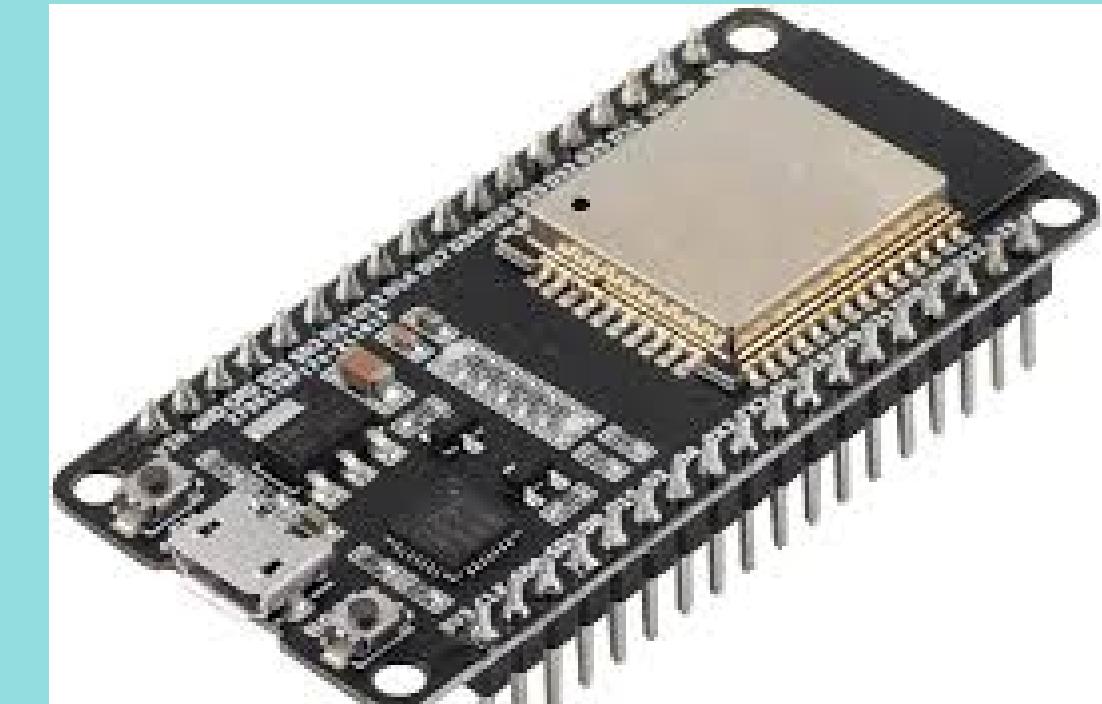
COMPONENTS USED



MQ2 Sensor



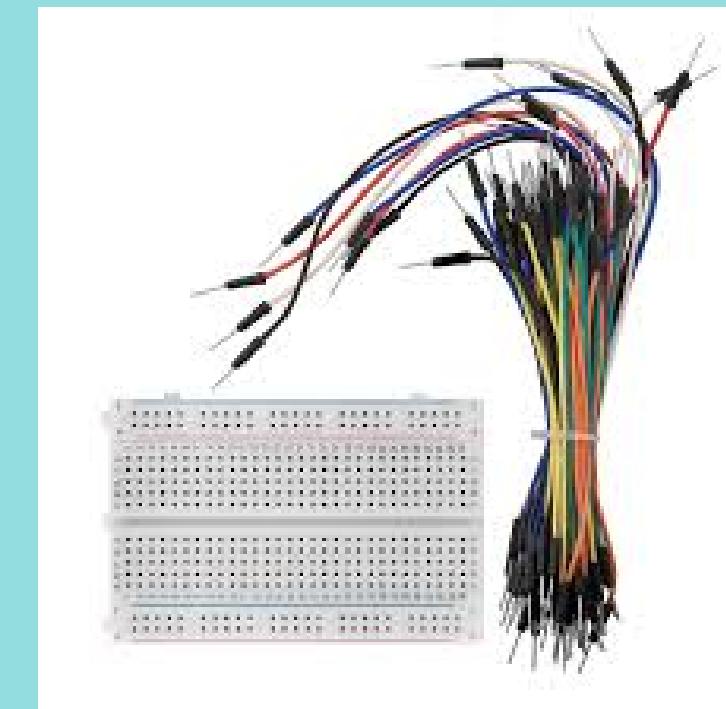
BUZZER



ESP -32



SERVO MOTOR



BREADBOARD AND WIRES

COMPONENT DESCRIPTION

1. MQ2 Sensor



MQ2 Gas sensor is a Metal Oxide Semiconductor (MOS) type Gas Sensor mainly used to detect gases like Methane, Butane, LPG, Smoke

2.BUZZER



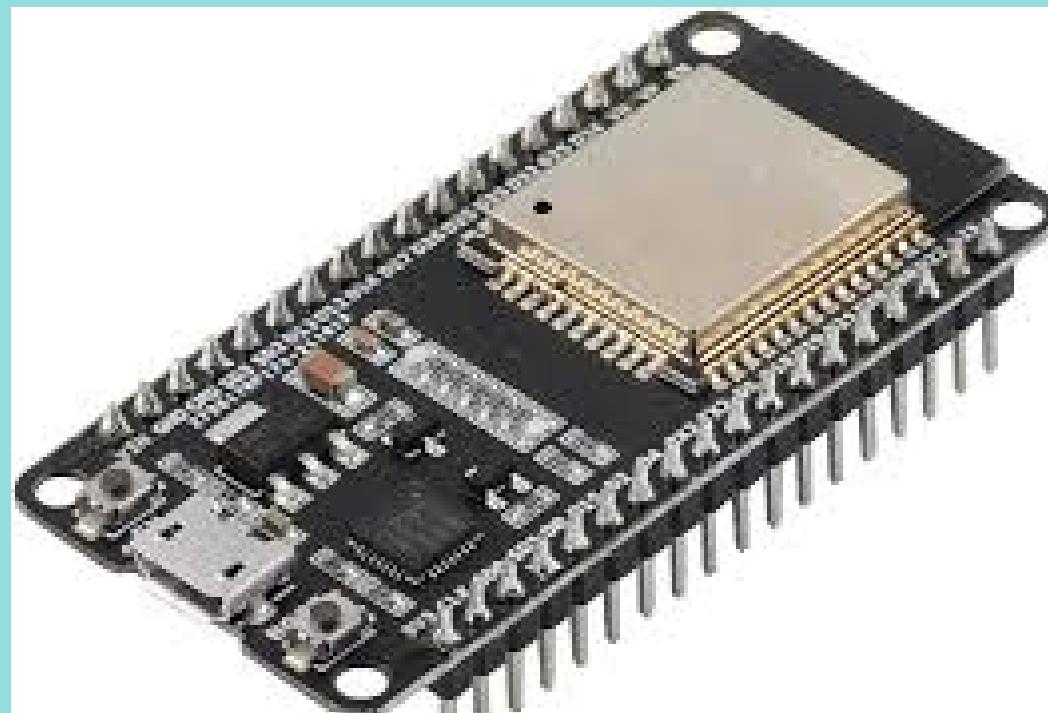
The main function of this is to convert the signal from audio to sound. Generally, it is powered through DC voltage and used in timers, alarm devices, printers, alarms, computers, etc. Based on the various designs, it can generate different sounds like alarm, music, bell & siren.

3.SERVO MOTOR

Servo motors or “servos”, as they are known, are electronic devices and rotary or linear actuators that rotate and push parts of a machine with precision. Servos are mainly used on angular or linear position and for specific velocity, and acceleration.

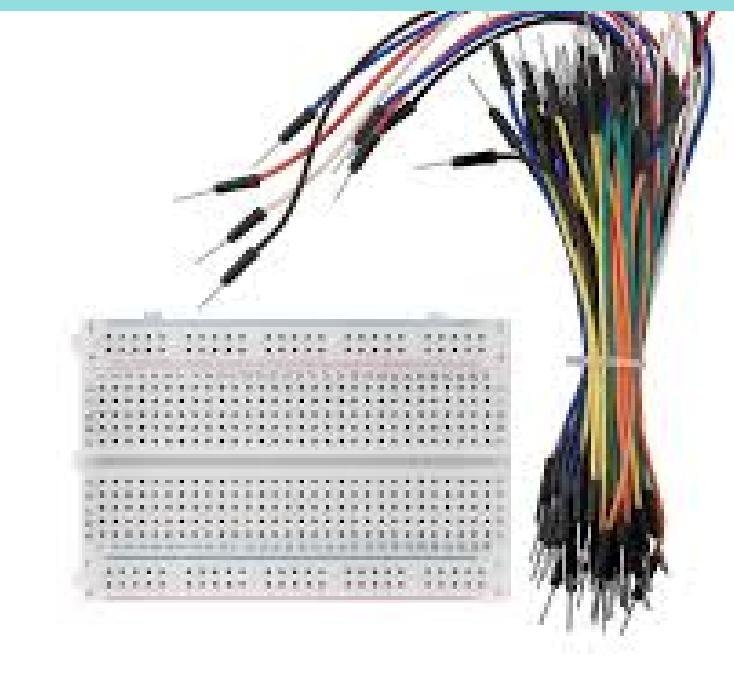


4.ESP -32



ESP32 is highly-integrated with in-built antenna switches, RF balun, power amplifier, low-noise receive amplifier, filters, and power management modules. ESP32 adds priceless functionality and versatility to your applications with minimal Printed Circuit Board (PCB) requirements. Hybrid Wi-Fi & Bluetooth Chip.

5.BREADBOARD AND WIRES

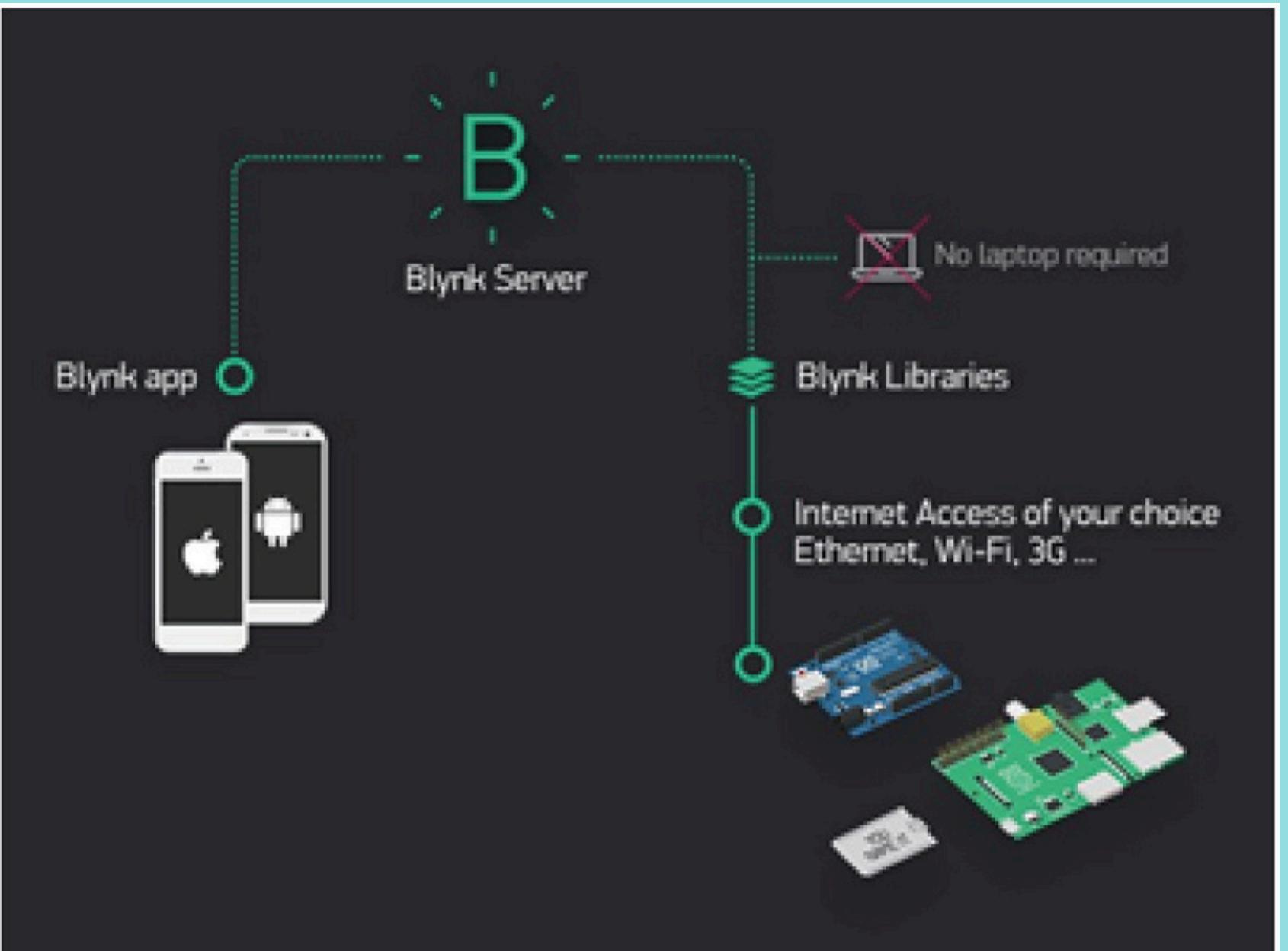


breadboard jumper wires are insulated electrical wires with bare ends, stripped of insulation. They are used to connect the components of a breadboard or circuit, either internally or together as a cable with other components.

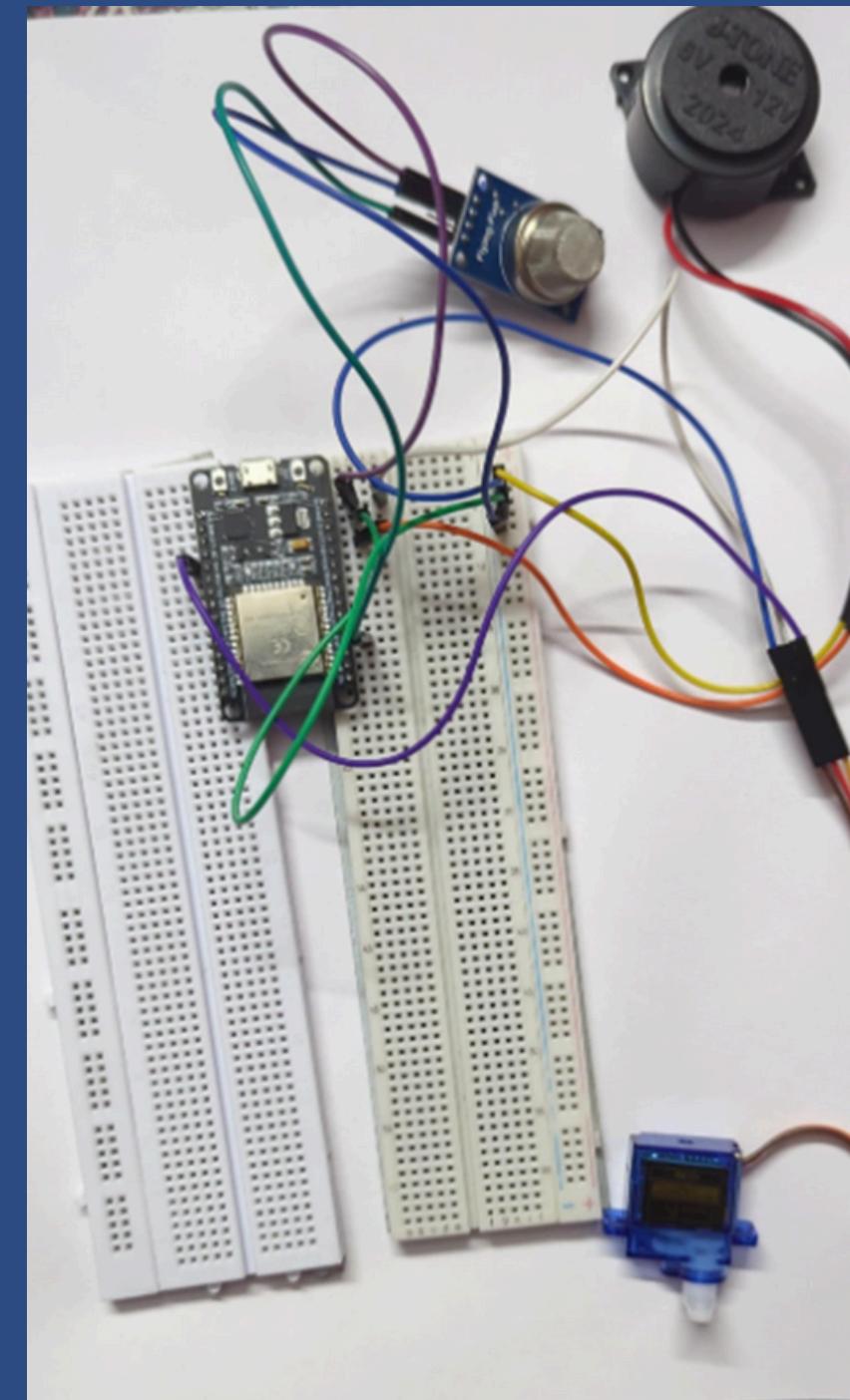
6.BLYNK IOT APP

Blynk is an IoT platform for iOS or Android smartphones that is used to control Arduino, Raspberry Pi and NodeMCU via the Internet.

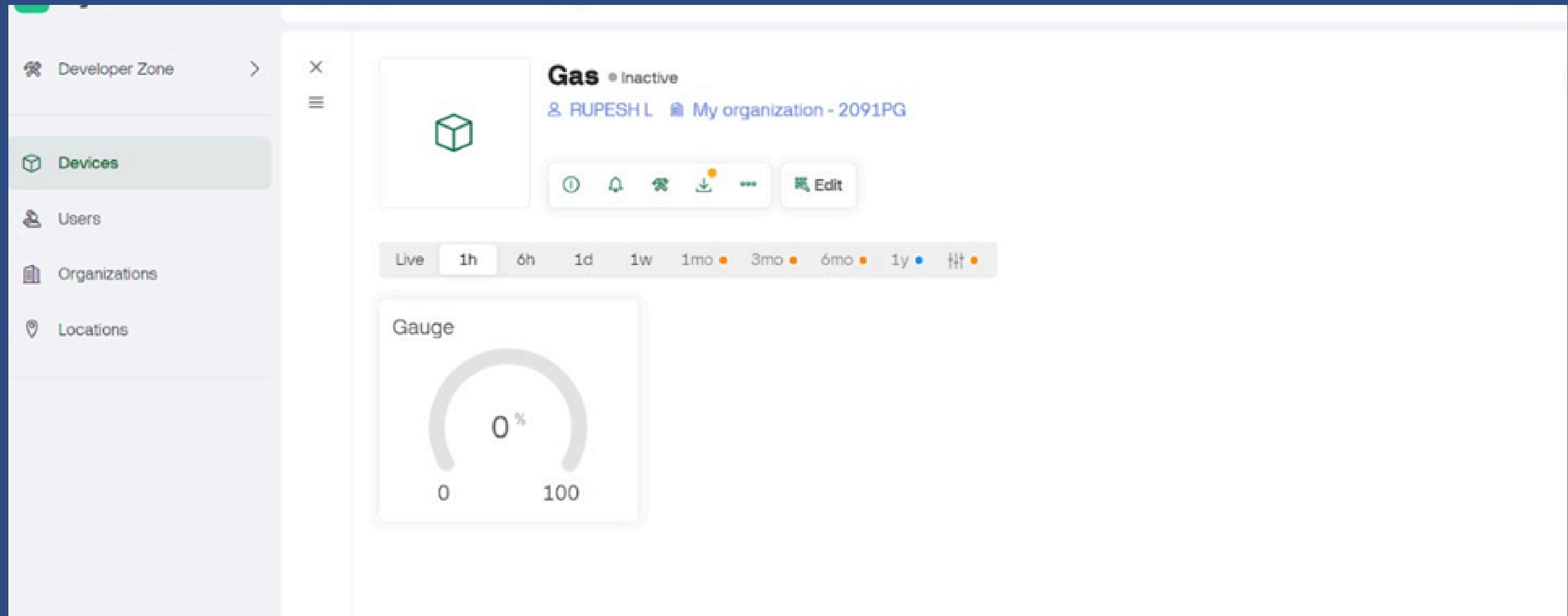
This application is used to create a graphical interface or human machine interface (HMI) by compiling and providing the appropriate address on the available widgets.



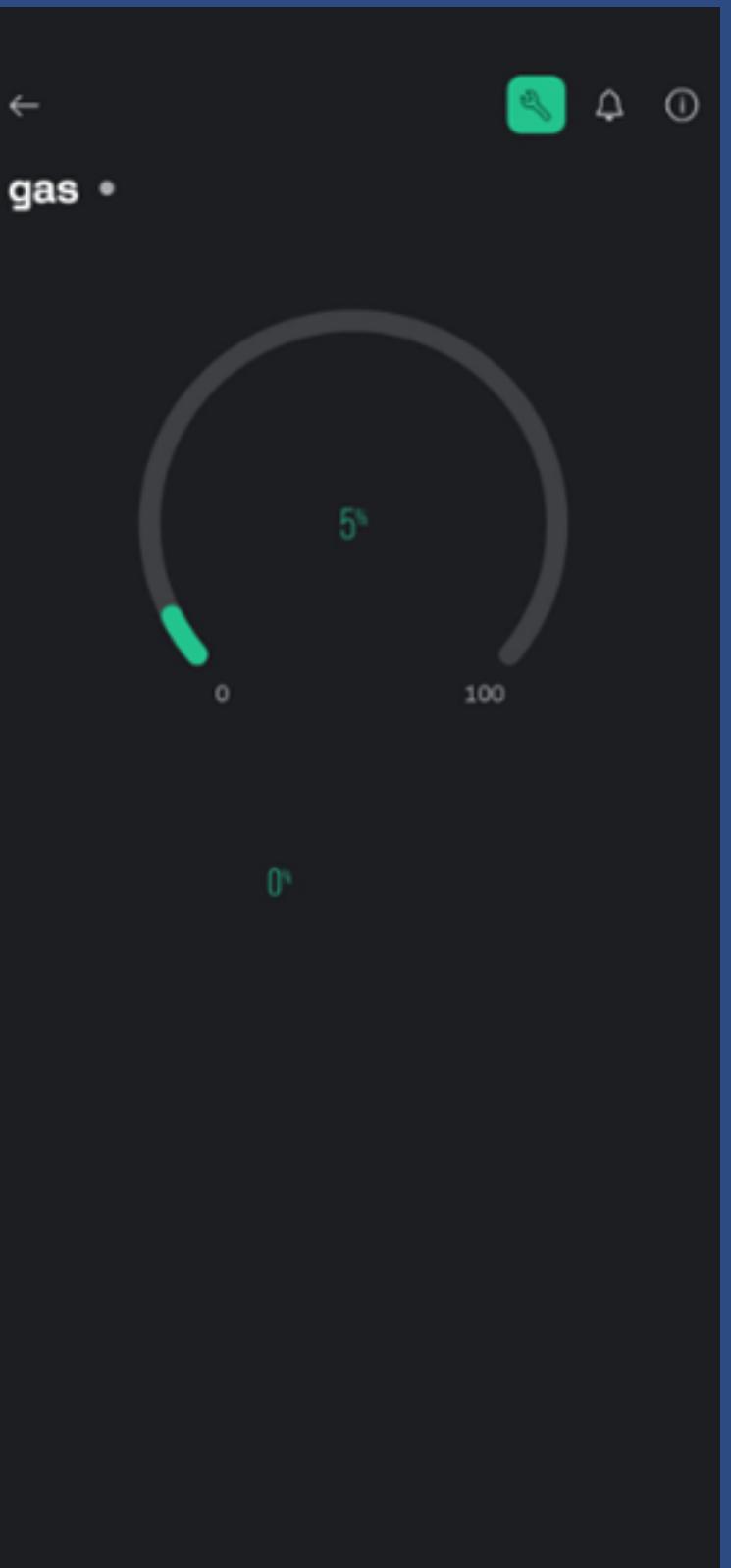
CIRCUIT DIAGRAM



RESULTS



Showing gas level in Bylnk console



Realtime data in blynk iot app

Features

- In this LPG gas detector system senses the LPG gas using MQ2 gas sensor.
- This device will continuously monitor the level of LPG gas present in the air.
- While monitoring, if the value of LPG gas in air is within the set limit then the RGB LED on the circuit will glow green giving a safe sign.

ADVANTAGES

- IOT AND ARDUINO BASED LPG LEAKAGE DETECTION SYSTEM CAN BE INSTALLED IN HOMES, HOTELS, LPG CYLINDER STORAGE AREAS.
- THIS PROJECT IS THAT IT CAN DETERMINE THE LEAKAGE AND SEND THE DATA ON PHONE.
- IT CAN HELP IN SAVING THE LOSS OF LIVES AND PROPERTY.

CONCLUSION



This system provides a control action during gas leakage by closing the solenoid valve. And it activates the alarm and also sends alert messages to the users within a short time. It is an economical system which can be installed in apartments, hotels and wherever it is needed. The cost of the proposed system is lesser than the commercially available detectors in the market. It can help us to prevent from accidents in all directions. There are some products available which are similar to this gas leakagedetector but those are not cost efficient and doesn't have any safety mechanisms. If this product becomes commercial, it will overcome all demerits of other similar products.

FUTURE ENHANCEMENTS

Incorporating machine learning algorithms to analyze sensor data could offer more precise leak detection and predictive maintenance, distinguishing between different gases and identifying patterns indicative of potential leaks. Battery optimization through improved power management and low-power modes for the ESP32 can extend the system's battery life, crucial for battery-operated setups. Automated response mechanisms, such as shutting off gas supply valves or activating ventilation systems when a leak is detected, can further enhance safety. .



THANKYOU