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DESIGN OF REMOTE SECURITY MONITORING AND CONTROLLING SYSTEM USING IOT

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Abstract

This paper is aimed toward providing security to homes by providing services like detection gas escape, Power short circuit and management of appliances like electrical devices etc. exploitation IOT technology. In any of the on top of mentioned cases, if you're out of your home then the device sends alert to the web page. The LPG Gas detector is often used as a wireless Gas leak detector in home security system.

It is designed to modify AN LPG detection detector to be interfaced to Microcontroller. By interfacing the microcontroller to a IOT electronic equipment we will additionally receive notification through webpage. household appliance system relies on IOT network technology for transmission of webpage from sender to receiver to regulate the turning ON/OFF of home appliances like ACs and FAN. the additional feature is side is that the lifesaving feature to save lots of the life from accidents.

I. INTRODUCTION

Monitoring and controlling of appliances is one of the important measures to be closely monitored and used in real-time for safety, security and comfort of people. With the advancements in Internet technologies and Wireless Sensor Networks (WSN), a new trend in the era of ubiquity is being realized. Enormous increase in users of Internet and modifications on the Internet working technologies enable 36 Sangeetha Sadu and Rajeshwar Rao Arabelli networking of everyday objects [1]. Web-enabled systems have offered great promise to consumers. Their benefits are well known. Reduction of operating and maintenance costs due to remote monitoring, diagnostics, debugging, and upgrading firmware. Convenience and safety that comes with the ability to monitor the status of a smart house and to control Internet appliances when away from home.

Remote monitoring of residential and industrial properties, notification of emergency services in case of , shortcircuit, and a leak of liquid or gas. Similar types of Internet-based systems, such as those in, are designed to gather a bulk of data before serving them upon request. In these applications, data are compiled in a central server and are then served to the clients via the internet. Interaction with the embedded unit is also an important issue. In, an embedded PC card placed on the Internet allows limited interaction through commands sent through Transmission Control Protocol/Iinternet protocol (TCP/IP) and User Datagram Protocol (UDP). The paper proposes a Raspberry pi based appliances monitoring and control system through webpage with WI-FI based technology.

II. LITERATURE SURVEY

A recent huge interest in Machine to Machine communication is known as the Internet of Things (IOT), to allow the possibility for autonomous devices to use Internet for exchanging the data. This work presents design and execution of real time monitoring and fault detection of transformer and record key operation indictors of a dispersion transformer like load current, voltage, transformer oil and encompassing temperatures and humidity. They have to look at it continuously by using this paper it can minimize working efforts and improve accuracy, stability, efficiency in this paper, sensors are used to sense the main parameters of equipment such as voltage, current(over voltage, under voltage, over current) this sensed data is sent to microcontroller and this controller checks parameter limits which further send to the IOT web server Adafruit software using WiFi module of these data makes sure the right information is in hand to the operator and operator can make useful decisions before any catastrophic failure on basis of that data of parameters.

III. PROPOSED DESIGN

The proposed system contains a Arduino and sensor and IOT based Appliances monitoring system. It can monitor the parameters such as light intensity, room temperature, fire and LPG gas. It also indicates the leakage of LPG gas and also inform the usage of LPG gas when it exceeds beyond certain level to the user or concerned authority.

In the proposed system, Industry and home appliances parameters such as gas leakage, fire, light intensity and LPG gas weight age can be monitored and also controlled by the modules such as when gas will be detected exhausted fan ON automatically to send gas outside of the space and also when fore will be detected.

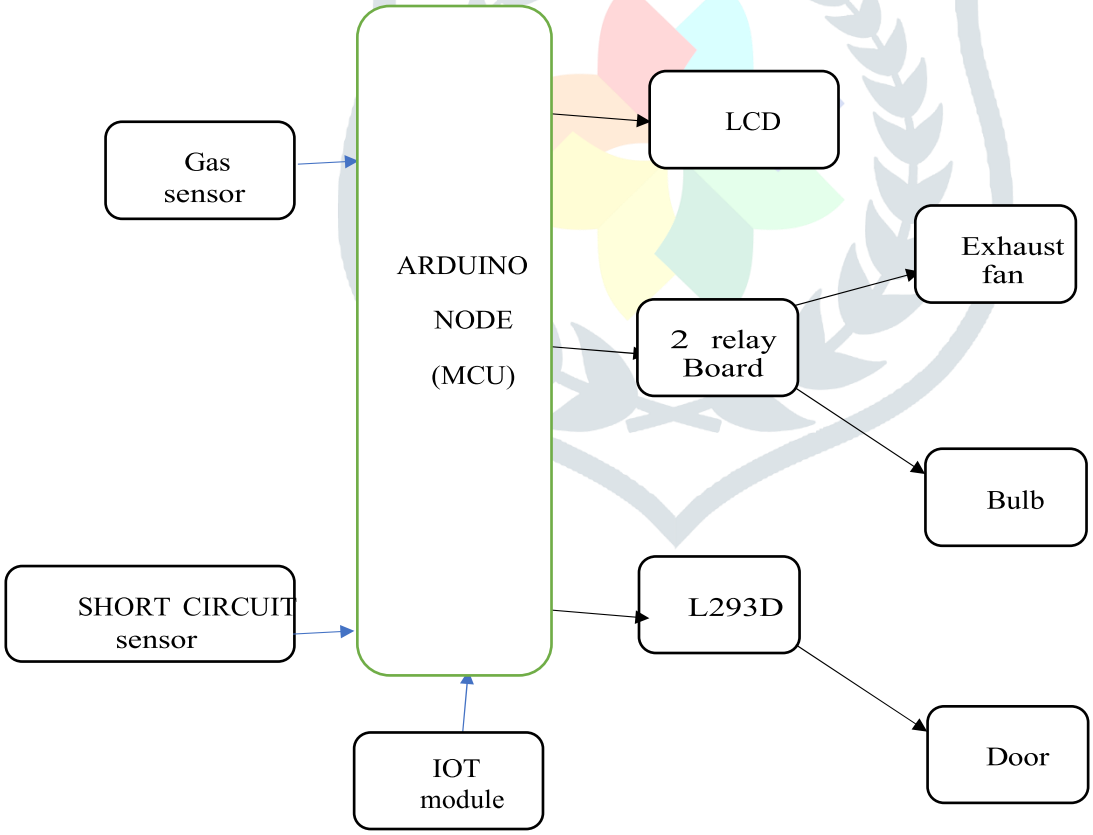

Fig .1: Block diagram of proposed system

HARDWARE COMPONENTS DESCRIPTION: Since it has a Microcontroller (in the form of Ten silica's L106 Diamond), the ESP-12E can bused as either a stand-alone device with its Wi-Fi connectivity and GPIO Pins or it can be used as a Wi-Fi adapter for other microcontrollers like Arduino, for example, through UART interface.The ESP-12E Module consists of ESP8266 SoC, 4MB of SPI Flash, 26 MHz Crystal, PCB antenna and some RF related components. As you can see from the image, the ESP-12E has a lot more pinsthan ESP-01Module and all the pins on the PCB are edge castellated.If you are interested in designing your own breakout board for ESP-12E Module, then the following ESP-12E Pinout imagewill be very useful for you. As you can see, there are 22 pins on the ESP-12E Module.The abovepinout diagram of ESP-12E Module describes all the pins and their alternative functions as well. The following table describes the pins of ESP-12E Module.

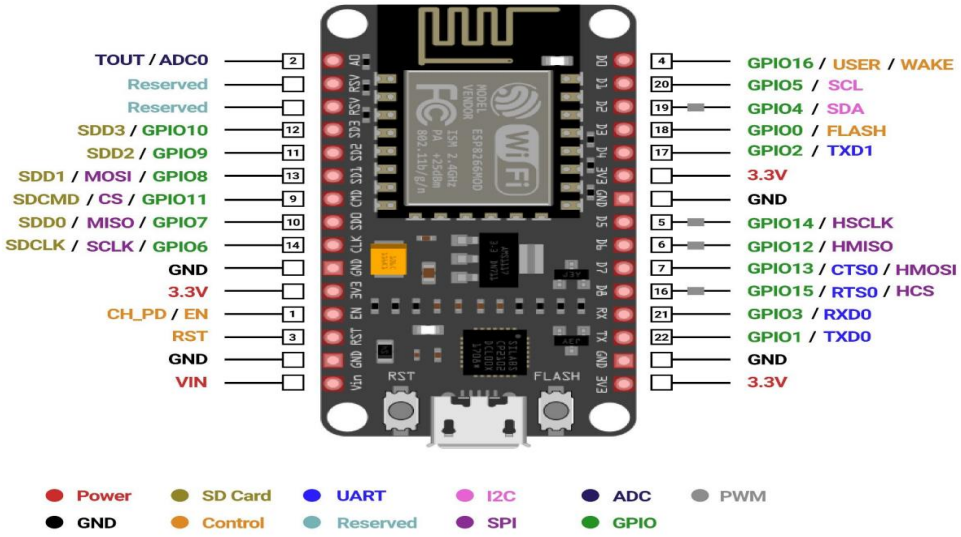

Fig.2:pin description of ardunio node mcu

Fig.3:2*16 LCD Display

2*16 LCD Display: The most commonly used ALPHANUMERIC displays are 1x16 (Single Line & 16 characters), 2x16 (Double Line & 16 character per line) & 4x20 (four lines &Twenty characters per line). The LCD requires 3 control lines (RS, R/W & EN) & 8 (or 4) data lines. The number on data lines depends on the mode of operation. If operated in 8-bit mode then 8 data lines + 3 control lines i.e. total 11 lines ar required. And if operated in 4-bit mode then 4 data lines + 3 control lines i.e. 7 lines are required. How do we decide which mode to use? It's simple if you have sufficient data lines you can go for 8 bit mode & if there is a time constrain i.e. display should be faster then we have to use 8-bit mode because basically 4bit mode takes twice as more time as compared to 8-bit mode.

When RS is low (0), the data is to be treated as a command. When RS is high (1), the data being sent is considered as text data which should be displayed on the screen. When R/W is low (0), the information on the data bus is being written to the LCD. When RW is high (1), the program is effectively reading from the LCD. Most of the times there is no need to read from the LCD so this line can directly be connected toGnd thus saving one controller line. The ENABLE pin is used to latch the data present on the data pins. A HIGH LOW signal is required to latch the data. The LCD interprets and executes our command at the instant the EN line is brought low. If you never bring EN low, your instruction will never be executed.

Gas sensor: Gas sensor is mainly used to detect multiple gasses in the atmosphere.It i a device that responds to the concentration of gasses(in part per million or ppm)in the environment where it is installed.The device works by creating a potential difference

by altering the materials internal sensors resistance.Small Sensitivity to alcohol, smokeSmoke Stable and long life,It isFast response ,Simple drive circuit .

Fig.4:Gas sensor

Relay: The 12V 2 Channel IoT Relay Module should be configured prior to use. For one time configuration of this module,the user needs server credentials, wifi credentials and IP address of server. The Server IP address and the server credentials for the user will be given to the customer at the time of purchase via email.

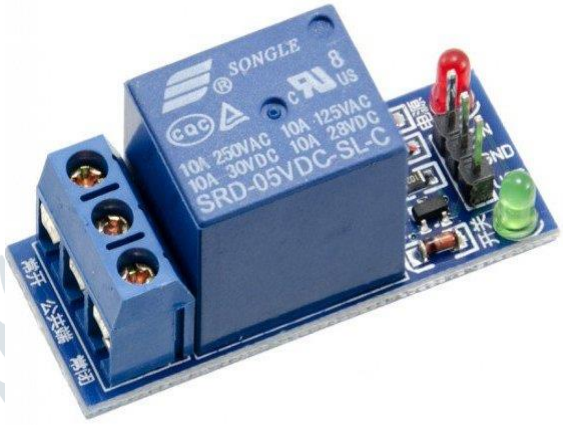

Fig.5:Relay circuit

Power supply: All digital circuits require regulated power supply. In this article we are going to learn how to get a regulated positive supply from the mains supply.

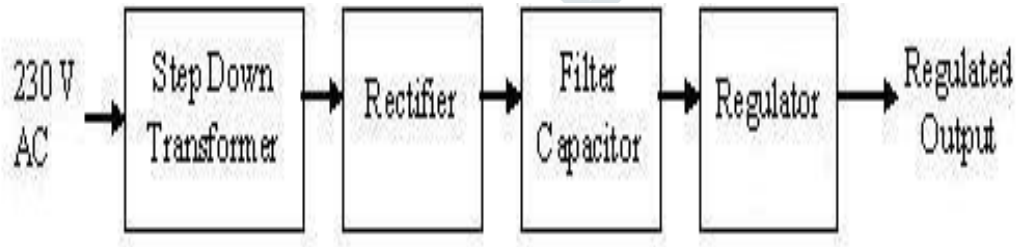

Fig.6:Block dairam of power supply

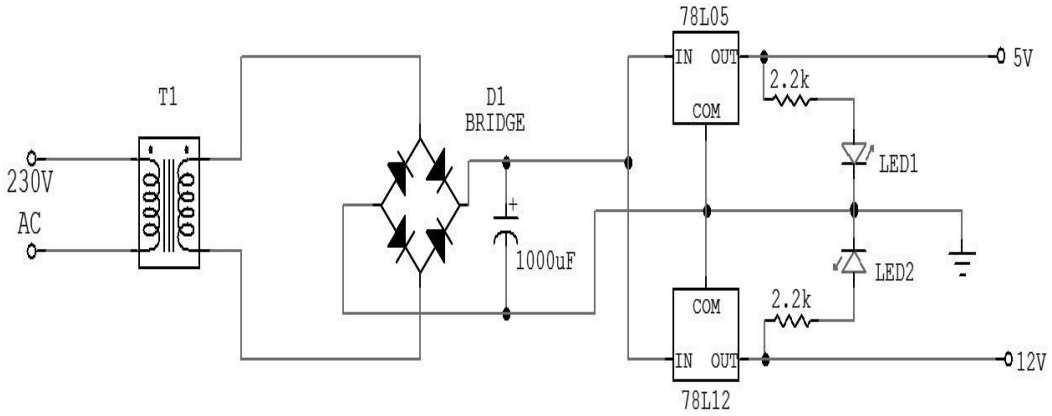

Fig.7:Circuit diagram of power supply

Short circuit sensor: A short circuit sensor is an electrical device that detects and alerts to potential short circuits in electrical systems. It monitors electrical currents and voltages, detecting anomalies that could indicate a short circuit. When a short circuit is detected, the sensor triggers an alarm, alerting maintenance personnel or automatically shutting off power to prevent damage or electrical shock.

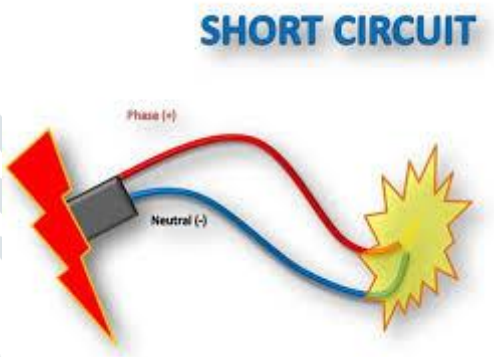

Fig.8:Short circuit sensor

IV. SOFTWARE REQUIREMENT:

These are the steps you need to follow in order to be up and running:

1.Get an Arduino board
2.Download the Arduino environment
3.Install the USB drivers
4.Connect the board
5.Upload a program
6.Get an Arduino board

The Arduino i/o board is a simple circuit featuring the ATmega8 processor from Atmel. The board is composed of a printed circuit board (PCB) and electronic parts. There are a few ways to get an Arduino board:
buy a ready made board. See how you can buy a board or just the PCB. o European distributor

o US distributor

Build your own board. If you want you can build your own PCB just by downloading the CAD files from the Hardware page. Extract the .brd file and send it to a PCB manufacturer. Be aware that manufacturing a single pcb will be very expensive. It's better to get together with other people and make 20 or 30 at a time. Since you get the full CAD files you can make your own customised version of Arduino. if you make modifications or fix bugs please send us your changes! Purchase parts. Purchase the parts from any electronics store. The Serial version in particular has been designed to use the most basic parts that can be found anywhere in the world. The USB version on the other hand requires some advanced soldering skills because of the FTDI chip that is an smd part. Assemble the board. We put together a step by step guide on how to build an arduino board. Newbies: never soldered before? afraid of trashing thousands of boards before getting one properly soldered? fear not :) learn to master the art of soldering.

Program the boot loader. In order for the development environment to be able to program the chip, this has to be programmed with a piece of code called bootloader. See the bootloader page on how to program it on your chip.

Download the ARDUINO environment

To program the Arduino board you need the Arduino environment.

Download Arduino: From the software page.

Linux note: For help getting the Arduino IDE running on Debian, please see the FAQ ("How can I run the Arduino IDE under Linux?").

Mac OS X note: After downloading the IDE, run the macosx _ setup .command . It corrects permission on a few files for use with the serial port and will prompt you for your password. You may need to reboot after running this script.

Fig.9: Install the USB drivers

If you are using a USB Arduino, you will need to install the drivers for the FTDI chip on the board. These can be found in the drivers directory of the Arduino distribution. On Windows, you will need to unzip FTDI USB Drivers.zip. Then, when you plug in the Arduino board, point the Windows Add Hardware wizard to the FTDI USB Drivers directory. On the Mac, mount the FTDIUSBSerialDriver_v2_1_6.dmg (on PPC machines) or the FTDIUSB SerialDriver_v2_2_6_Intel..

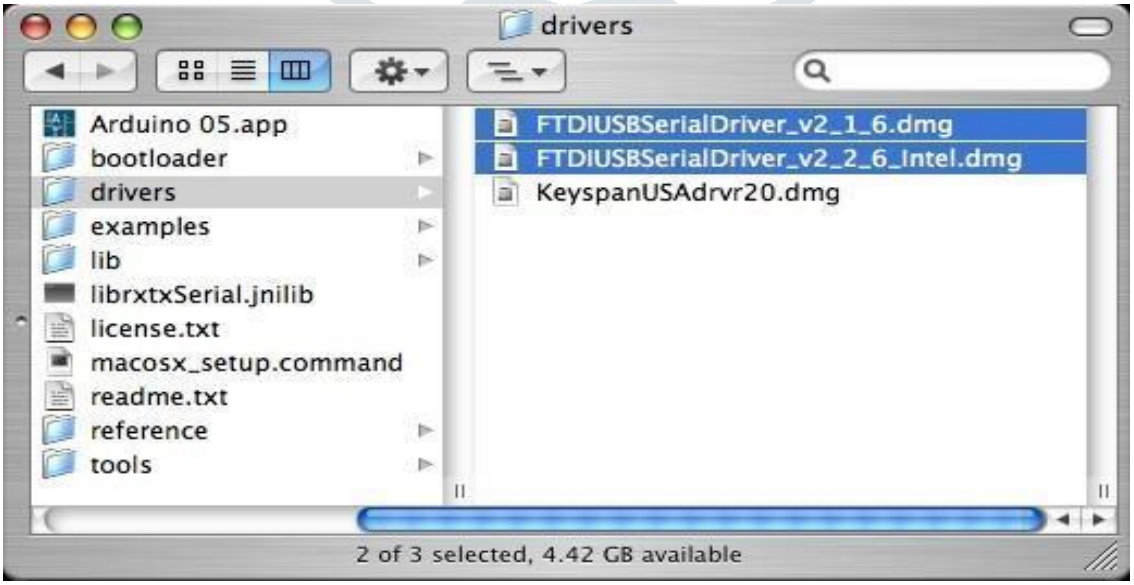

Fig.10:Open drivers in pc

Connect the board

If you're using a serial board, power the board with an external power supply (6 to 25 volts DC, with the core of the connector positive). Connect the board to a serial port on your computer. On the USB boards, the power source is selected by the jumper between the USB and power plugs. To power the board from the USB port (good for

controlling low power devices like LEDs), place the jumper on the two pins closest to the USB plug. To power the board from an external power supply (needed for motors and other high current devices), place the jumper on the two pins closest to the power plug. Either way, connect the board to a USB port on your computer. On Windows ,the Add New Hardware wizard will open; tell it you want to specify the location to search for drivers and point to the folder containing the USB drivers you unzipped in the previous step. The power LED should go on.

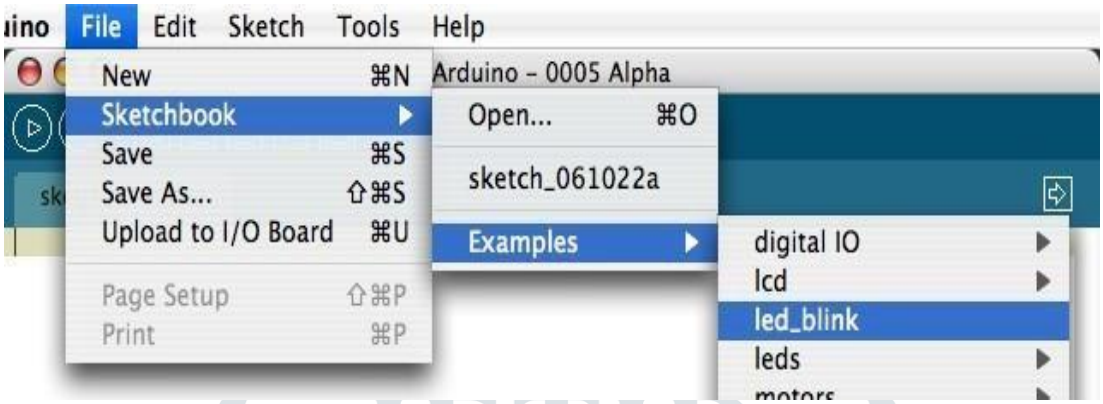

Fig.11:Open file and go to save and save the file

Here's what the code for the LED blink example looks like.

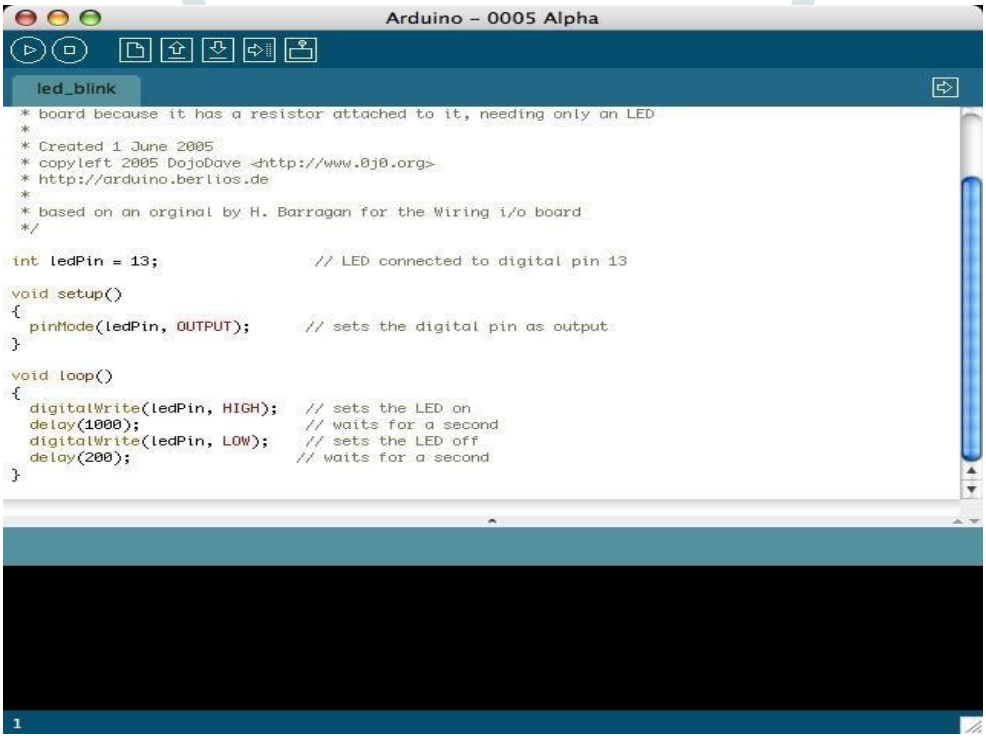

Fig.12:Upload the code in ARDUNIO

If the Arduino board doesn't show up in the Tools | Serial Port menu, or you get an error while uploading, please see the FAQ for troubleshooting suggestions. A few seconds after the upload finishes, you should see the amber (yellow) LED on the board start to blink. companies are selected on the bases of market capitalization .And 2015 is taken as base year for KSE-100 index.

V. RESULTS AND DISCUSSION

Step 1:Working model of proposed system.

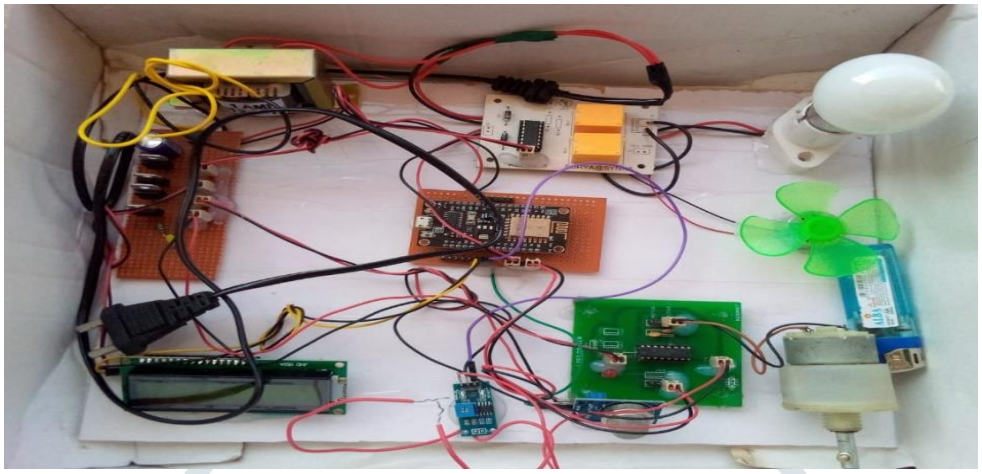

Fig.13: Hardware design remote security monitoring &controlling using iot

Step 2: When we switch on the power ,the LCD can displays GAS STATUS & SHORCIRCUIT STATUS.

Fig.14:show status shown on LCD display

Step 3: When the gas can leakage then the gas percentage will shows on webpage, more gas can leakage the percentage will be low, then automatically door will open

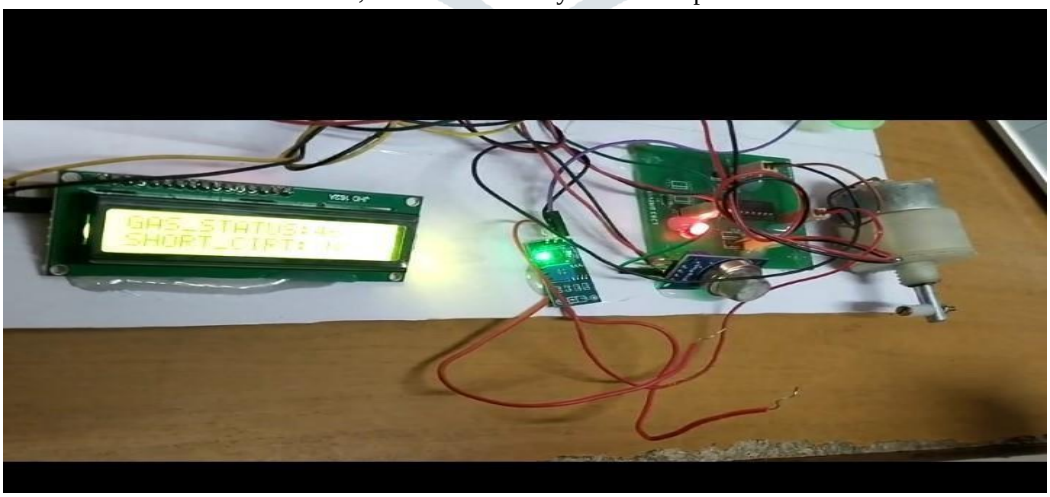

Fig.15:The status will shown on lcd and the door will open

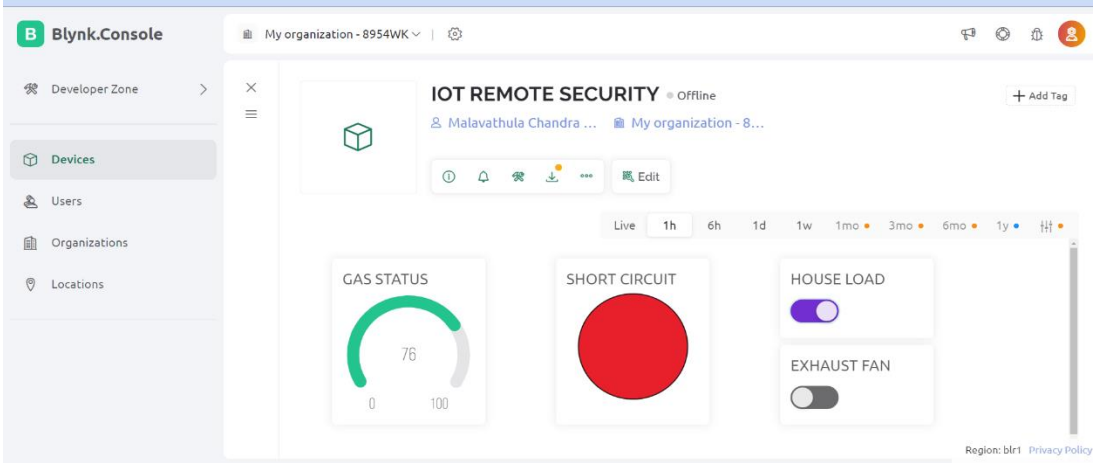

Fig .16:Working after gas leakage& short circuit will occur

Step 4:When the short circuit will occur the LED will glow and the LCD can display short circuit status. In web page also the red bulb will glow.

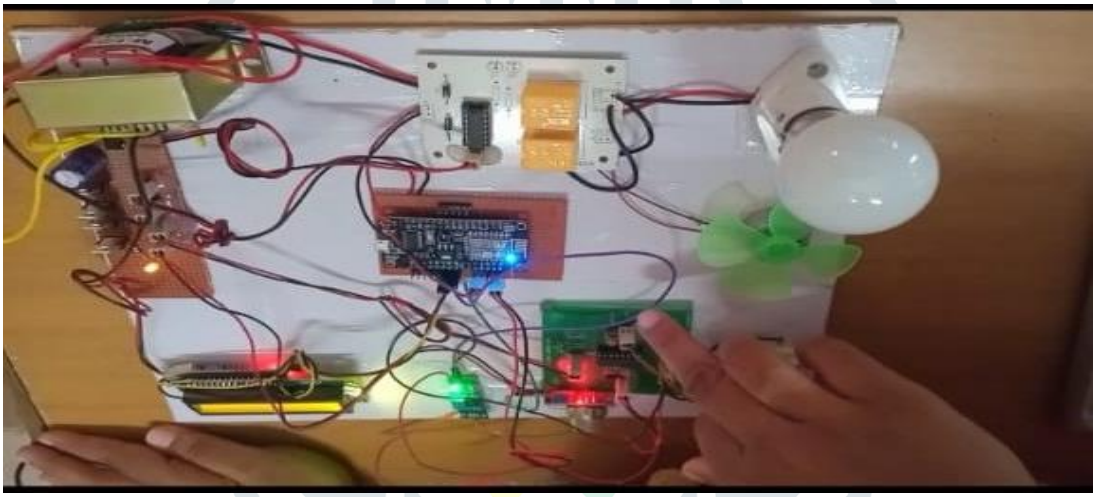

Fig.17:In these the circuit,short circuit will occur

Fig.18:Short circuit will occur the LED will glow

Step5:The short circuit occur the red light will appear on webpage.

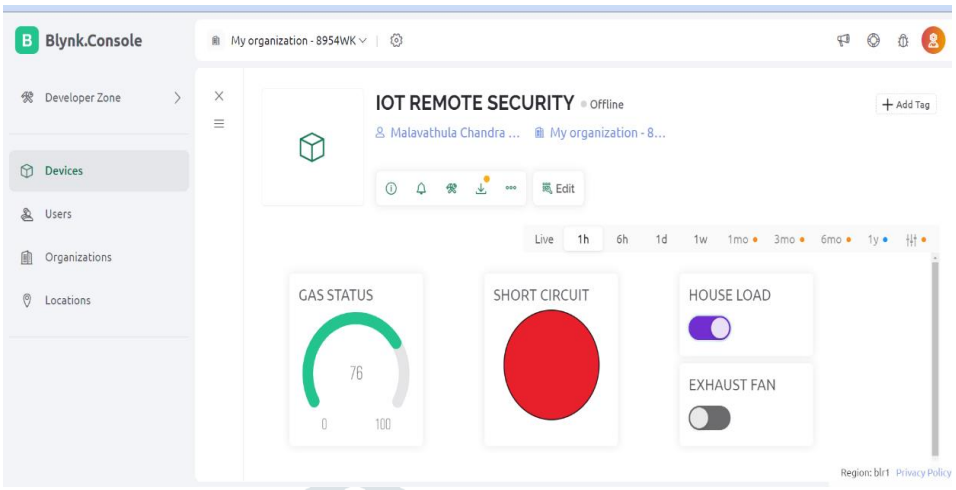

Fig .19:Controlling of gas leakage &short circuted wires using remote control

vi CONCLUSION&FUTUREWORK

Conclusion: A simple and cost-effective system is developed and design in this paper. This method is used to trace fault of the power grid synchronization failure on the basis of frequency fluctuations To provide power to the load the rules of grid involve maintaining a voltage in the limits and the frequency as well. If any deviation from the range of the grid occurs then it is compulsory that the grid should automatically get disconnected. This prevents in large scale brown out or black out of the grid power by sensing abnormalities of voltage and frequency.

Future scope: Designing an emergency remote security monitoring and control system using IoT involves integrating various sensors, communication modules and a centralized control platform to monitor and manage security devices remotely.

REFERENCE

[1]. Sahani, M.; Kumar Rout, S.; Mandal, A., "Remote monitoring in home automation using microcontroller, "Communications and Signal Processing , 2014International Conference April 2014
[2]. T. Lin, H. Zhao, J. Wang, G. Han, and J. Wang, “An embedded Webserver for equipment,” in Proc. 7th Int. Symp. Parallel Architectures, Algorithms and Networks, May 10–12, 2004, pp. 345–350.
[3]. A.Ramakrishnan, “16 bit embedded Web server,” in Proc. 2004, IEEE Sensors for Industry Conf., 2004, pp. 187–193
[4]. RTOS Evaluation Project, —What makes a good RT OS, Dedicated Systems Experts, 2001. [Online]. Available: www.dedicatedsystems.com.
[5]. K.Bharath reddy, Ch.Rajendra Prasad, —The Embedded Web server based Electrical Ethernet Monitoring system using RASPBERRI PI, International Journal of Advanced Research in Computer and Communication Engineering Vol. 2, Issue 5, May 2013.
[6]. E. Lin, C.-W. Hsu, Y.-S. Lee, and C.C.Li, — Verification of unmanned air vehicle flight control and survei llance using mobile communication, J. Aerosp.Comput.
[7]. Inf. Commun .,vol. 1, no. 4,pp.189 –197, Apr. 2004.W.-K. Chen, Linear Networks and Systems (Bookstyle). Belmont, CA: Wadsworth, 1993,pp. 123—135.