A project report on

ALCOHOL DETECTION SYSTEM

Submitted in partial fulfillment for the award of the degree of

Bachelor of Computer Applications

by

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May, 2020.

DECLARATION

I hereby declare that the thesis entitled "**ALCOHOL DETECTION SYSTEM**" submitted by us, for the award of the degree of BCA (Computer Applications) in VIT is a record of bonafide work carried out by us under the supervision of P. UshaPreethi, Assistant Professor.

I further declare that the work reported in this thesis has not been submitted and will not be submitted, either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university.

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CERTIFICATE

This is to certify that the thesis entitled "**ALCOHOL DETECTION SYSTEM"** submitted by Keerthana C (17BCA0058), Divya Bharathi G (17BCA0096) and Kamalnath S (17BCA0108) School Of Information Technology And Engineering VIT, for the award of the degree of BCA (Computer Applications) is a record of bonafide work carried out by them under my supervision.

The contents of this report have not been submitted and will not be submitted either in part or in full, for the award of any other degree or diploma in this institute or any other institute or university. The Project report fulfils the requirements and regulations of VIT and in our opinion meets the necessary standards for submission.

Signature of the Guide **Signature of the HOD**

Internal Examiner **External Examiner**

ABSTRACT

Nowadays there are so many accidents happening in the industries (Mechanical, chemical) due to the workers who consume alcohol during their work period. In order to prevent and reduce the rate of accidents happening in the industry, there are few preventive measures which have been evolved. Now we use new methods and technology for detecting the alcohol consumption of the worker. For this we use alcohol sensor which is placed along with the biometric attendance system. The workers have to pass the alcohol detection test then only they can able to proceed for their biometric attendance. If the worker does not pass the alcohol detection test then that worker would not be able to register for the biometric attendance system. This alcohol detection system is kept in a room that capable of detecting only one person at a time. At last with the help of cloud we gather information of workers that how many of them consumed alcohol and how many of them didn't consume alcohol and point out in graphical representations.

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It is my pleasure to express with deep sense of gratitude to P. UshaPreethi, Associate Professor, School Of Information Technology and Engineering, Vellore Institute of Technology, for her constant guidance, continual encouragement, and understanding; more than all, he taught me patience in my endeavour. Our association with her is not confined to academics only, but it is a great opportunity on my part of work with an intellectual and expert in the field of Network field.

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KEERTHANA C

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Date: KAMALNATH S

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LIST OF ACRONYMS

ACRONYMS	ABBREVATIONS
BAC	Blood Alcohol Content
BrAC	Breathe Alcohol Content
IDE	Integrated Development Environment
NodeMCU	Node Micro Controller Unit
APIs	Application Programming Interfaces
USB	Universal Serial Bus
LCD	Liquid Crystal Display
LED	Light Emitting Diode

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The Internet of Things (IOT) is a modern communication archetype that envisions in close proximity to prospect, in which the substance of daily life will be prepared with transceivers, microcontrollers for digital communication, and appropriate etiquette heaps that will make them competent to communicate with one another and with the users, becoming a fundamental component of the Internet. The IOT notion, hence, aims at building the Internet even more immersive and omnipresent. With the intention of properly administrating the disastrous events, information desires to be cooperated with each other, for instance by distributing resources and/or information and organizing measures, behaviour and decisions. Additionally, at some point in a crisis, such possessions and information must be amalgamated with the purpose of achieving intricate errands, such as relinquishing a geological region and carry out operations by way of sensors. The need of integrated infrastructures and platforms which lend a hand in information attainment ends up in a terrible administration of the emergency.

Industry is one of biggest support of the country and also for the worker their family and welfare. The economic status of the India is developing by the help of industries. Some workers are habituated to consume alcohol during their working hours due to that many accidents, traumas and also lead to death many times which is not for good for the workers' health as well as for the industry. To prevent the accident alcohol sensors are used for checking the concentration of alcohol in an individual. Nowadays, they are mainly used by the traffic police. But we proposed the alcohol detection system in industries to prevent the accidents happening due to the alcohol consumption by the worker. To check the alcohol concentration, workers have to pass the alcohol detection system. The alcohol sensor is used for calculating the alcohol content. This happen because alcohol doesn't get digested instead it is absorbed by the mouth. Thus, some traces are always left even after several hours of drinking. That traces are detected by the alcohol detecting system. We implement the project of alcohol detection for industrial workers. The worker will be checked while entering into the industry. After the checking process then only, the worker will be entering into the industry. If the worker detected in the alcohol detecting system, that worker would not be allowed for the work on that particular day.

Nowadays there are so many accidents happening in front of machineries in the industries due to the drunken workers. Only the supervisor will identify whether the workers was in drunken or not and it was not at all that much efficient. So we use the new methodology for detect the drunken workers. We use alcohol sensor in the place of attendance registering system. The workers have to pass the alcohol detection test then only they can able to register their attendance and also we installing this alcohol detection system in a room that capable of standing only one person at a time it solves the different persons working on the registering at a time.

1.2 BACKGROUND

In this project, the alcohol sensor is used for sensing the concentration of alcohol through human breathing (BrAC-Breathe Alcohol Content). It is a device that inbuilt with Arduino UNO, its operation pin 1 is connected to VCC, pin 2 is connected to digital output of the Arduino UNO, pin 3 is connected to analog output of the Arduino UNO, and pin 4 is connected to ground. This sensor has very sensitivity and fast response for alcohol detection.

1.3 PROBLEM STATEMENT

Drunken working is considered as one of the major reason of accidents in worldwide (based on industry or factory). Workers under the influence of alcohol show a clear failure of industry products and by the change in chemical reaction the accidents occurs.

1.4 MOTIVATION

In today's world, Alcohol addiction is increasing gradually so, that many accidents occur in public places. In this project, we choose industries to check whether the factory workers are consumed alcohol or not and to stop accidents in industries by workers who consumed alcohol.

1.5 OBJECTIVE

Alcohol sensors are used for checking the concentration of alcohol in a sample. Nowadays they are mainly used by traffic police. But we are proposed the alcohol detection in industries to prevent accidents. To check the alcohol concentration users have to pass the checking machine. The alcohol sensor which are used for calculating the alcohol content.

This happens because alcohol doesn't get digested instead it is absorbed by the mouth. Thus some traces are always left even after several hours of drinking. The economic status of the India is developing by the help of industries. Industry is one of main important thing among the people. Many workers lives are depending upon the industries. Some workers are drunk while working. If they work with drunken some accidents may occur in the industries. The machineries and the workers' health also spoiled to prevent the accident we implement the project alcohol detection for industry workers. The worker will be checked while entering into the industry. After the checking process then only the worker will enter into the industry. If they have drunken the worker will not allow entering into the industry.

1.6 SCOPE OF THE PROJECT

The scope of the project is to avoid accidents in industries due to alcohol consumption. If the worker is consumed alcohol the door will not open with buzzer sound and level of alcohol in LCD display. The worker cannot give biometric attendance of that day.

1.7 EXISTING SYSTEM AND PROPOSED SYSTEM

In Existing System, There is a possibility for the workers to enter into the company even if drunk. No idea was used to restrict the drunken workers entering in to the company. Managers cannot check each and every worker.

In Our Proposed System, Alcohol sensor which is placed along with the biometric attendance system. The workers have to pass the alcohol detection test then only they can able to proceed for their biometric attendance. If the worker does not pass the alcohol detection test then that worker would not be able to register for the biometric attendance system. This alcohol detection system is kept in a room that capable of detecting only one person at a time. By cloud computing technology the average result of drunken workers will be shown in graphical representation.

1.8 ADVANTAGES OF THE SYSTEM:

Easy and effective to test:

- Detectors are portable hand held device that are easy to handle.
- Provide quick results and buzzer alarm rings and displays the message on LCD display.

- Testing is very simple and easy anyone can handle or use this device

Quick and accurate results:

- The alcohol detection sensor in breathalyzers is sensitive enough to detect presence of alcohol with considerable BrAC accuracy.
- The sensor is build strong enough to provide accurate results for several times with the gas level and message which shows on LCD display and with the help of cloud it shows the graphical representation as results.

Helpful for managers:

- Detectors prove to be an effective tool in checking drunken working and prevailing of safe working conditions in factories.
- It can help to maintain a safe and productive environment at workplaces and surroundings.

High Sensitivity:

- The alcohol sensor is highly sensitivity to combustible gas in wide range.
- It can also detect gases like LPG, Propane, Methane, Butane, and Hydrogen.

Cost and power consumption:

- This type of detectors is very cheap in cost.
- This feature extremely low power consumption in comparison to electromagnetic units.

Prevention:

- To prevent accidents in factory or industries due to drunk and working.

CHAPTER 2

LITERATURE SURVEY

2.1 LITERATURE SURVEY

[1] TITLE: Driver Safety with Smart Alcohol Detection and Control System

JOURNAL: IJRTI Volume 4, Issue (2019)

AUTHOR: Prathamesh Dixit, Rushiraj Chavan, Abhishek Shirke, Sonali Sarade, Prof. Dr. G. M. Bhandari

DESCRIPTION: The purpose of this project is to develop vehicle accident prevention by method of alcohol detector in an effort to reduce traffic accident cases based on driving under the influence alcohol. This project is developed by integrating the alcohol sensor with the microcontroller 16F877A. The alcohol sensor used in this project is MQ-2 which to detect the alcohol content in human breath. An ignition system which will produce spark plugs is build up as a prototype to act like the ignition starter over the vehicle's engine. We have provided a very effective solution to develop an intelligentsystem for vehiclesfor alcohol detection whose core is Arduino. Since sensor has fine sensitivity range around 2 meters, it can suit to any vehicle and can easily be hidden front the suspects. The whole system has also an advantage of small volume and more reliability. As the growing public perception is that vehicle safety is more important, advances in public safety is gaining acceptance than in the past. Future scope of this system is to control the accidents causes due to alcohol consumption. This system improves the safety of human being. And hence providing the effective development in the automobile industry regarding to reduce the accidents cause due to alcohol.

[2] TITLE: Accident Avoidance and Detection on Highway

JOURNAL: IJRTE Vol.7 Issue 7 (2019)

AUTHOR: P.Ranjana, Rajeswari Mukesh, Achhint Kumar, N.N.S.S.Sujith, C.H.Sathyasai

DESCRIPTION: In this paper, this module is proposed to prevent people from unnecessary deaths caused by road accidents due to drunken driving. This module consists of raspberry pi model 3, alcohol detection sensor (MQ-2), GPS module and relay to control speed. It is due to the driver’s fatigue, traffic accidents keep with a yearly increasing of a high rate. This

paper shows the new fatigue detection algorithms & techniques using eye blink, alcohol, impact, gas, etc. sensors. In this technique the fatigue will be detected immediately and regular traps the events driver and third party. Through research presented in this paper, we propose an intelligent car system for accident prevention and making the world a much better and safe place to live.

[3] TITLE: Alcohol detection system

JOURNAL: IOSR-JCE Vol.4 Issue 7 (2018)

AUTHOR: Prof. Dr. D.G.Jha, Swapnil Buva

DESCRIPTION: This paper attempts to explore the possibility of using the technology that would detect the level of alcohol in the blood and prevent "very-start" of the motor vehicle. The model device aims at preventing the user from driving when drunk and reduces the number of accidents occurring due to drunken driving. The model is created using Arduino Uno and Alcohol detecting sensor. The alcohol detecting sensor (MQ-3) when connected to an Arduino UNO R3 detects the level of alcohol content in blood by analysing driver's breath. From this paper we can conclude that drinking and driving is a very dangerous act and is not only a threat to the person who's drunk and driving, but also to the people who are travelling on the same road as him. This paper concludes that many people have made numerous attempts and have tried to solve the problem. They have used many sensors and devices like MQ-3 alcohol sensor, MQ-135 gas sensor for alcohol detection, Arduino Uno and many more. When we use the above techniques, we are closer to solving this huge problem. We can prevent road accidents caused due to drinking and driving. This way we can prevent unnecessary deaths of innocent lives.

[4] TITLE: Accident prevention with sensors

JOURNAL: IJSDR Vol. 2, Issue 4 (2017)

AUTHOR: Prof D.Kavitha, T.G.Deepika, A.Devapriya, N.Divya Bharathi.

DESCRIPTION: The proposed system may reduce the accidents occurring due to these factors. Various sensors are used in this system like alcohol sensor, speed detection sensor, seat belt sensor, eye blink sensor. The sensors are used to detect them and will be frequently updated in a webpage. When any of the accident causing factors are likely to occur an alert is given and the engine slows down and stops. Also the owner gets an alert and he will take the

appropriate measures. A frequent update is being made. The real-time stamps are taken from the array of RFID sensor network and the velocity of the vehicle is calculated in the real-time environment using Euler's algorithms. Here an Arduino platform with an Ethernet connection is used as a core controller and the resultant data are viewed on the internet using cloud computing. Also this can be implemented using two main components GPS and GSM. GPS is attached to the vehicle need to be monitored.

[5] TITLE: Alcohol Detection System in Vehicle

JOURNAL: IRJET Vol.4 Issue: 06 (2017)

AUTHOR: Pranjali Ingalepatil, Priyanka Barhate, Bhagyashri Nemade, Prof.Vijay D. Chaudhari

DESCRIPTION: This paper present the progress in using the alcohol detector ,a device that senses a change in the alcoholic gas content of the surrounding air these device is more commonly referred to as a breath analysis, as it analysis the alcohol content from person's breath. The system detects the presence of alcohol in the vehicle and immediately locks the engine of the vehicle. As majority of accidents occurring nowadays ar thanks to drunk driving, thus a good methodology to forestall this is often to develop associate Integrated Drunk And Drive Detection. Integrated Drunk associated Drive Detection system is meant with an economical and increased technology The main unit of this project is associate "Alcohol sensor". If the person within automobile has consumed alcohol then it's detected by the sensing element. Sensing element provides this signal to a comparator IC. The output of comparator is connected to the microcontroller. Integrating options of all the hardware parts used are developed in it. Presence of each module has been reasoned out and placed fastidiously, therefore conducive to the simplest operating of the unit.

[6] TITLE: Alcohol Detection and Accident Avoidance Using Locking With Tracking

JOURNAL: IJARCM Vol.3, Issue 9 (2015)

AUTHOR: Mandalkar Rahul B, Pandore Rahul N, Shinde Manoj B, Godse Valmik D, Prof. Durugkar S.R

DESCRIPTION: The main intention of this system is to avoid the rate accidents which are normally happened due drunkenness of driver. This system detect the drunkenness of driver and prevent them from driving, so this try to provide one type of security or safety

mechanism to driver and save live. there are also lot of accident reason such as high speed of vehicle, drunking, drowsiness of driver, seat belt adjustment ,and avoid the use helmet that's all lead to accident. Proposed system will efficiently detect alcohol through driver breath and stop the vehicle by suspending the ignition, instead of directly stopping the vehicle. Proposed system can notify relatives of driver, police station. Future scope of this system is it can also check whenever the accident happens will notify immediately to the numbers provided in application by the end user and therefore people in the car can get service as early as possible by minimizing the casualties. To implement this approach GSM system can be used, it will also help police to identify drunken drivers and give punishment them by tracking it's vehicle using GPS system.

[7] TITLE: Road Accident Avoiding System using Drunken Sensing Technique

JOURNAL: IJERT Vol.3 Issue 10 (2014)

AUTHOR: Prashanth K, Kishen Padiyar, Naveen Kumar P, K Santhosh Kumar

DESRIPTION: The purpose of this project is to develop vehicle accident prevention by method of alcohol detector in an effort to reduce traffic accident cases based on driving under the influence of alcohol. This project is developed by integrating the alcohol sensor with the microcontroller. The alcohol sensor used in this project is MQ-2 which detects the presence of alcohol content in human breath. An ignition system with spark plugs is build up as a prototype to act like the ignition starter over the vehicle's engine. The ignition system will operate based on the level of Blood Alcohol Content (BAC) in human breath detected by the alcohol sensor. An efficient system of vehicle accident prevention system embedded by alcohol detector has been proposed. It consists of PIC 16F877 as the main controller, alcohol sensor as the input and LCD display as output. This system is capable to alert the driver about the level of drunkenness by indicating the condition on LCD display. The most safety element provided by this system, is that the driver in high level of drunkenness is not allowed to drive a car as the ignition system will be deactivated. Ultimately, this system helps to prevent the driver to drive in risky situation and will avoid road accidents.

[8] TITLE: Liquor Detection through Automatic Motor Locking System

JOURNAL: IJCER Vol.4 Issue 7 (2014)

AUTHOR: Prof Phani Sridhar.A, Prof Samuel Susan.V, Prof G. Kalyan Chakravathi, Ravi Teja.G

DESCRIPTION: In this paper a concept of conventional method instead of breath analyzers in which traffic accidents due to drunken state of drivers could be reduced. This is implemented by the use of a simple alcohol sensor but with an interruption of alcoholic breath. Here the possibility of detection could be only when the person enters the vehicle and starts the engine. Also the delay in response is also characterized by turbulent flow of timing pulses through the various special function registers in the microcontroller. In this System a realistic social technique has been proposed to eradicate the loss caused due to drunken drivers. It has also been assured in a more technical way, so as to appreciate the use of RTOS which also gave the importance in the occurrence of interrupts as well as its execution. This could also be extended to the heavy vehicles, air bus, navigating vehicles, sense detection machines. These are also extended to bio medical fields, software development industries.

[9] TITLE: Alcohol Detection and Accident Prevention of Vehicle

JOURNAL: IJETT Vol.3 Issue 2 (2012)

AUTHOR: S.P.Bhumkar, V.V.Deotare, R.V.Bobar

DESCRITION: The purpose behind this project is “Drunk and driving detection”. Now a day, many accidents are occurring because of the alcohol consumption of the driver or the person who is driving the vehicle. Thus Drunken driving is a most reason of accidents in almost all countries all over the world. Alcohol Detector in Car system is designed for the safety of the people inside the car. This project should be fitted / installed inside the vehicle. Our system efficiently checks the accidents occurs or not and drunken driving. By implementing this system in vehicle, a safe journey is possible which would decrease the injuries during accidents and also reduce the accident rate due to drunken driving. This system has also accident prevention technology which would reduce the accident of the vehicle in crowd areas. We can describe that this is a safety features for vehicle because if alcohol detected or accident happens then it will stop automatically. In case of alcohol detected or any accident happens it would send the messages to the friends continuously about the location of the accident happened till the first aid reaches the rider. Our system helps also to know the location of the vehicle for rescuing in the case of theft incidents.

[10] TITLE: Design of Alcohol Detection System for Car Users thru Iris Recognition Pattern Using Wavelet Transform

JOURNAL: ISMS Vol.4 Issue 4 (2016)

AUTHOR: Lea Angelica Navarro, Mark Anthony Dino, Exechiel Joson, Rommel Anacan, Roberto Dela Cruz.

DESCRIPTION: The purpose of this paper is to develop a system that captures the Iris image of the driver by detecting if the person is drunk and likewise to develop a reliable algorithm for Iris Recognition. This paper is composed of hardware and software system which focuses on the implementation of an algorithm based on Gabor Filter. The system consists of CCD Camera and Analog-to-Digital Converter, which is linked into a MATLAB program to simulate the captured image which then provides a signal going to the microcontroller and a relay circuit to manipulate the car ignition. If the MATLAB program detects that the driver is under the influence of alcohol, a bypass system follows through a password which is recognized by the MATLAB program then the car/vehicle starts.

CHAPTER 3

DETAILED DESIGN OF THE PROJECT/ SYSTEM DESIGN

3.1 SYSTEM MODULES

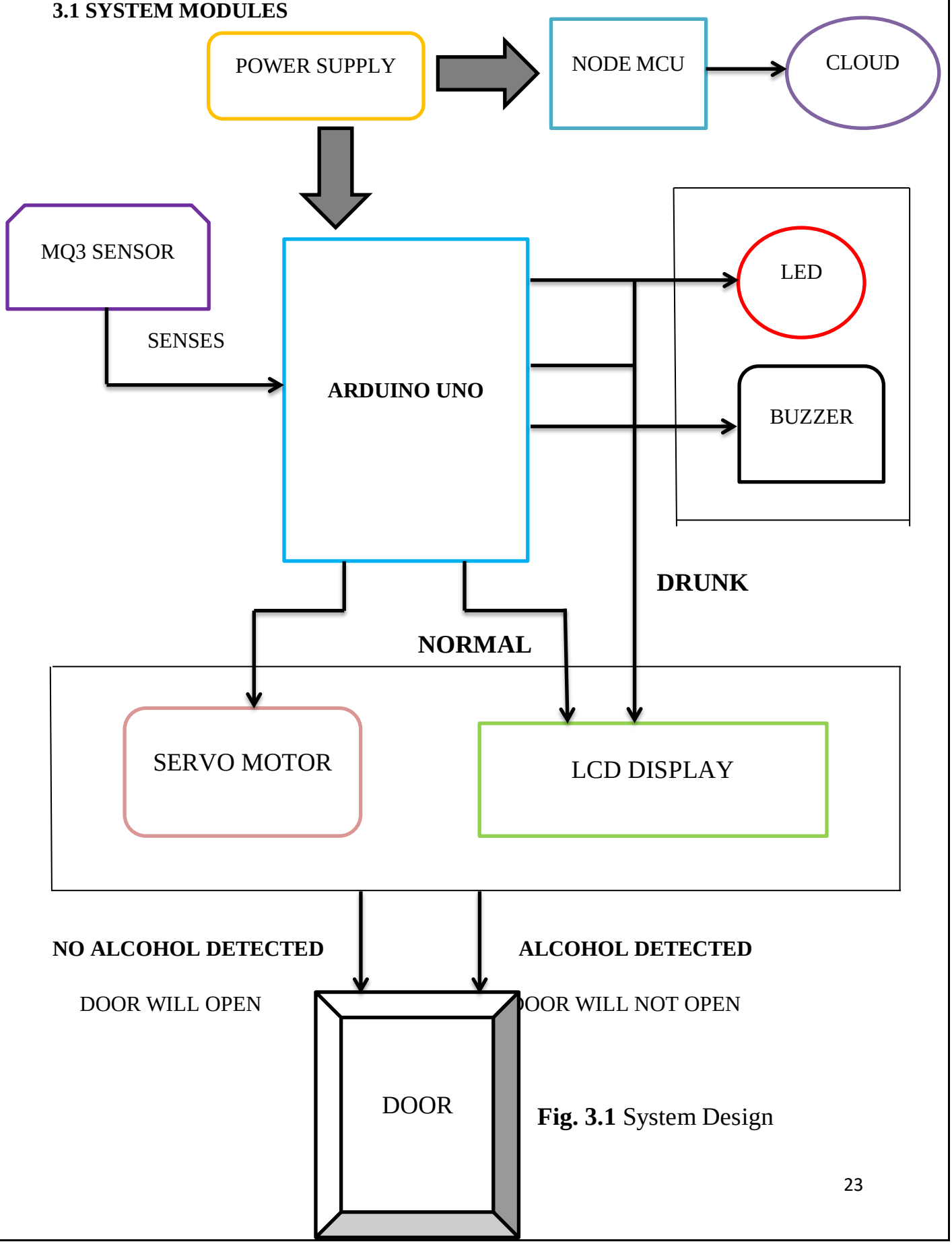

Fig. 3.1 System Design

3.2 UML DIAGRAMS

3.2.1 SEQUENCE DIAGRAM

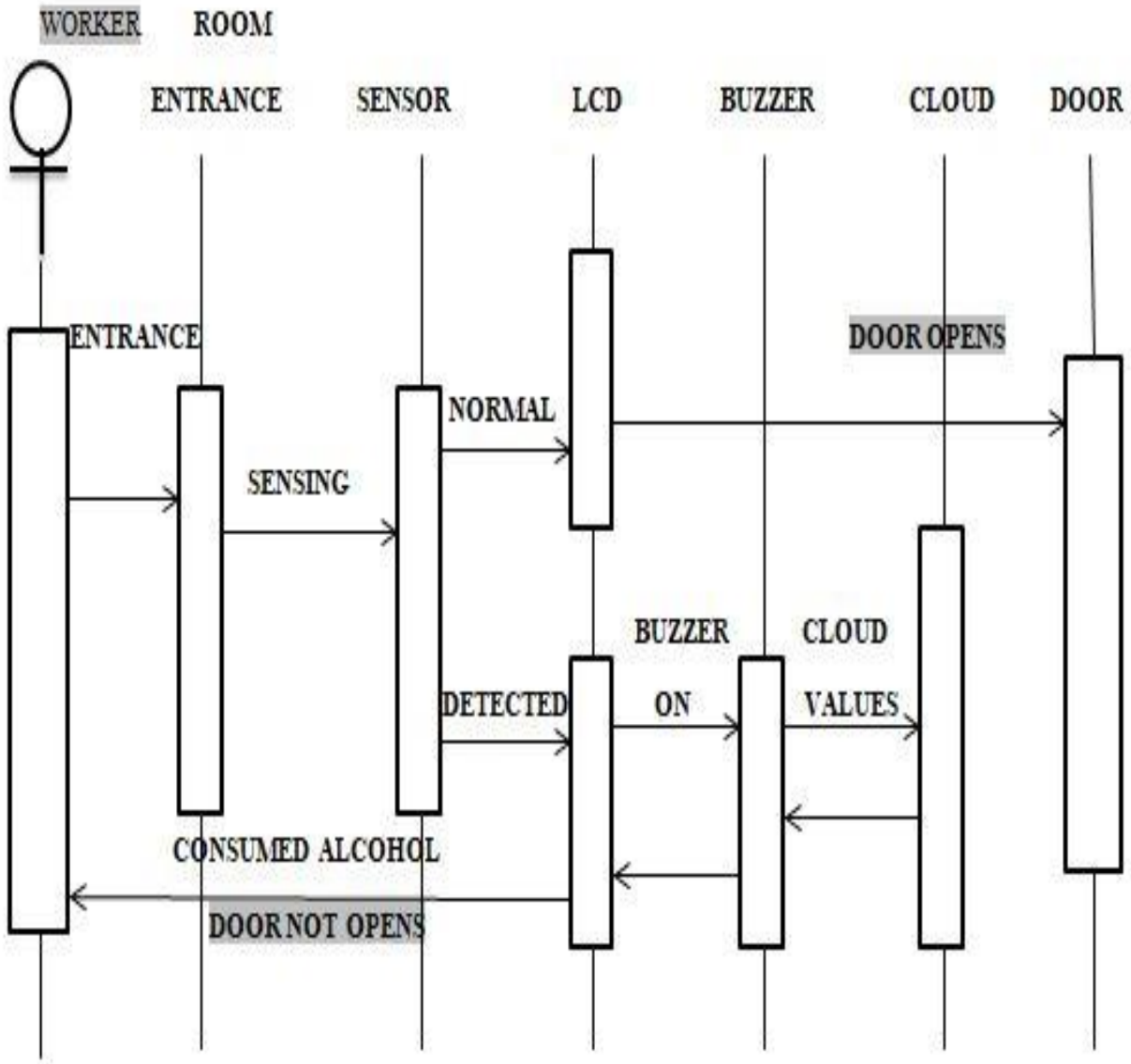

Fig 3.2.1 Sequence Diagram

3.2.2 USE-CASE DIAGRAM

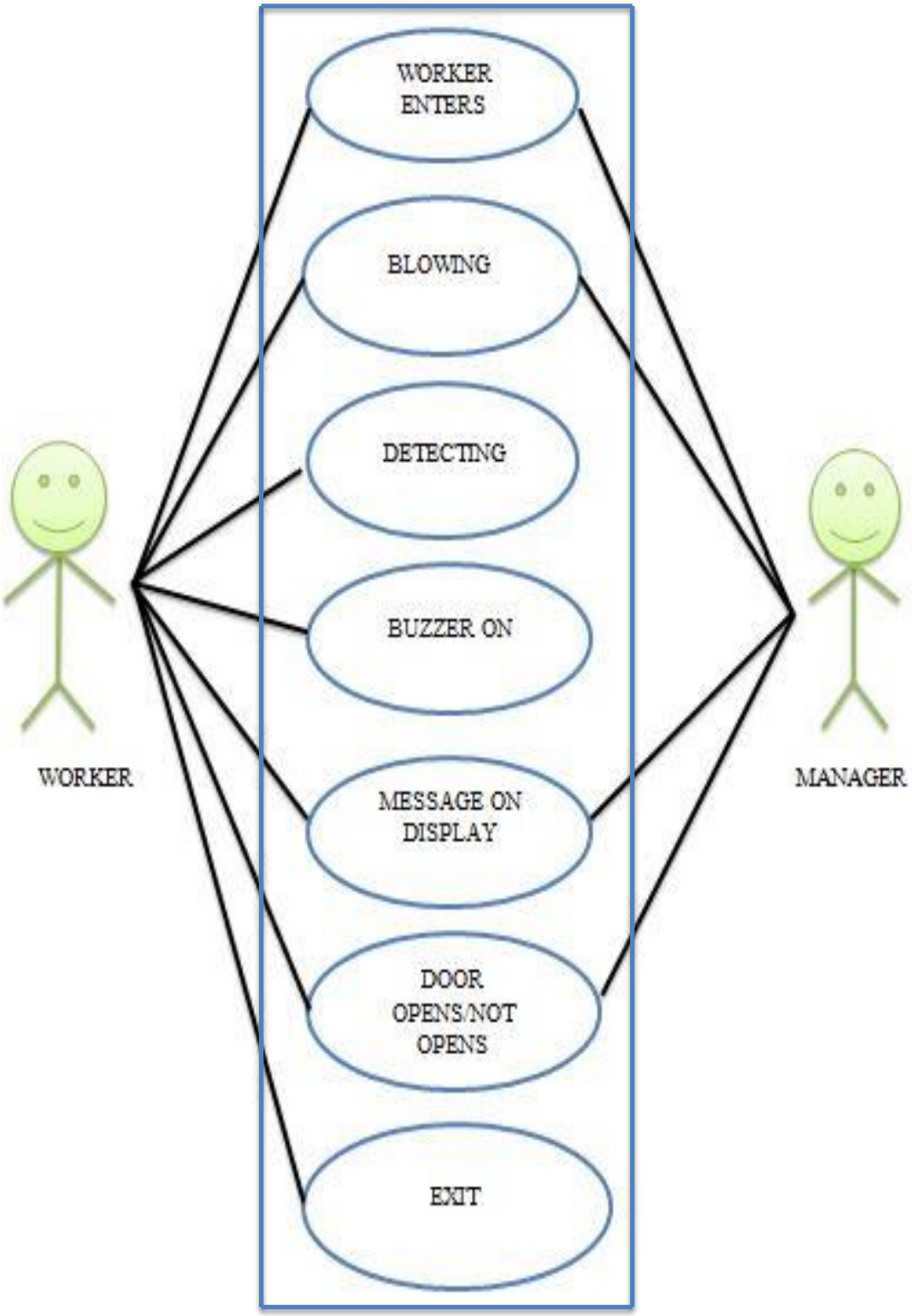

Fig. 3.2.2 Use-case diagram

3.2.3 ACTIVITY DIAGRAM

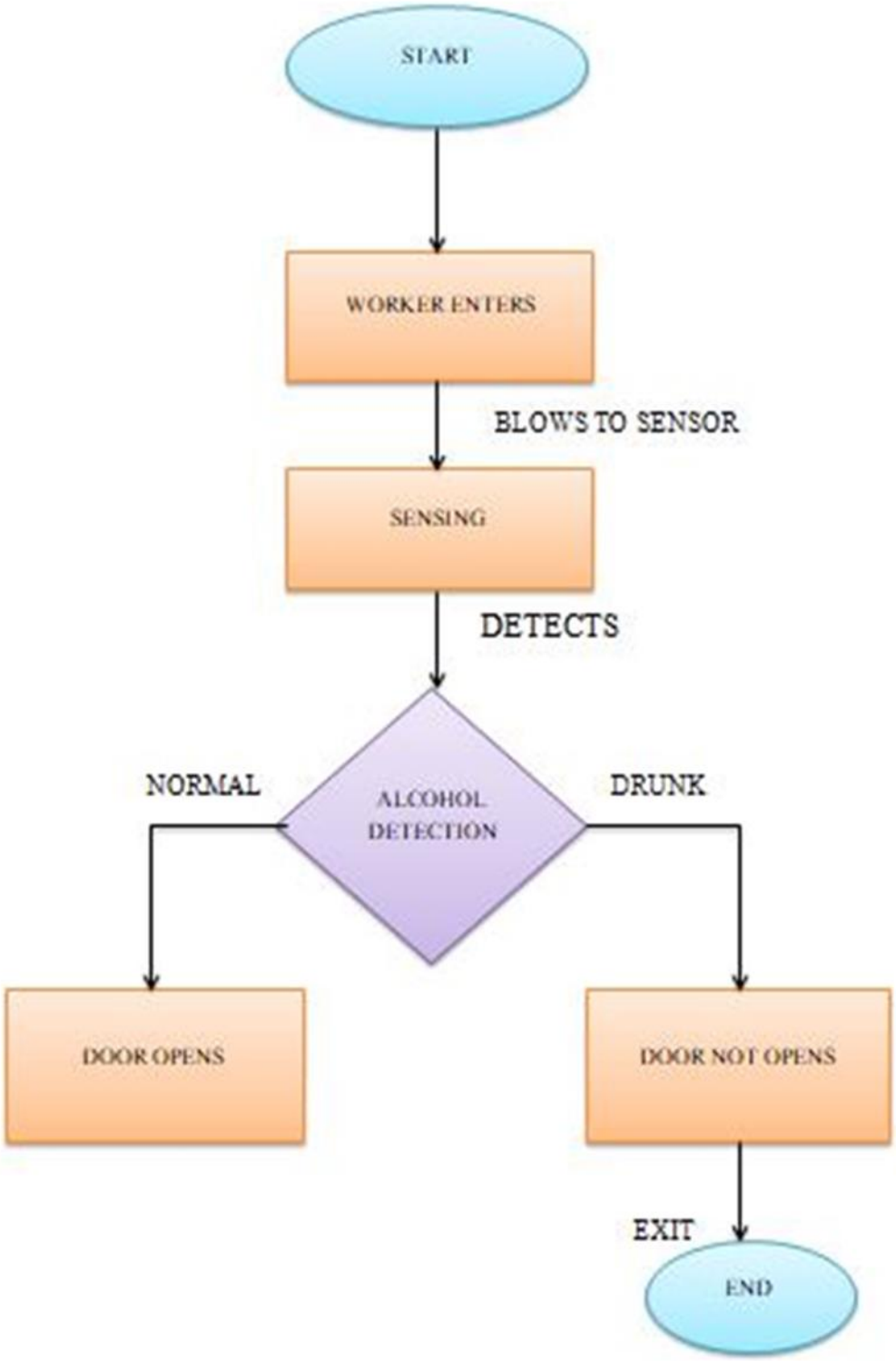

Fig. 3.2.3 Activity diagram

3.3 REQUIREMENT SPECIFICATION

3.3.1 HARDWARE REQUIREMENTS

- Arduino UNO board
- NodeMCU
- Alcohol sensor(MQ3)
- LCD display
- Servo Motor
- Buzzer
- Jumper wires
- LED light

3.3.2 SOFTWARE REQUIREMENTS

- Arduino IDE
- Blynk App
- Embedded C++ Language

3.4 TECHNOLOGY USED

In this project, we are using CLOUD technology (Public cloud) is also known as CLOUD COMPUTING OR SYSTEM.

Cloud computing is the delivery of on-demand computing services from applications to storage and processing power. Including servers, storage, databases, networking, software, analytics and intelligence over the internet to offer faster innovation, flexible resources.

Types of cloud:

- Public cloud
- Private cloud
- Hybrid cloud

Types of cloud services:

- SaaS (Software as a service)
- PaaS (Platform as a service)
- IaaS (Infrastructure as a service)
- Serverless Computing (via network)

Advantages of cloud:

- Cloud computing eliminates the capital expense of buying hardware and software and setting up and running on-site datacenters.
- Most cloud computing services are provided self service and on demand, so even vast amounts of computing resources can be provisioned in minutes as just a few mouse clicks.
- The benefits of cloud computing services include the ability to scale elastically.
- The biggest cloud computing services run on a worldwide network of secure datacenters, which are regularly upgraded to the latest generation of fast and efficient computing hardware.
- Cloud computing makes data backup, disaster recovery and business continuity easier and less expensive because data can be mirrored at multiple redundant sites on the cloud provider's network.
- Many cloud providers offer a broad set of policies, technologies and controls that strengthen your security posture overall, helping protect your data, apps and infrastructure from potential threats.
- Cloud computing offers Application Programming Interfaces (APIs) to the users for access services on the cloud and pays the charges as per the usage of service.
- Cloud computing allows us to easily access all cloud data via mobile.

Disadvantages of cloud:

- If we do not have good internet connectivity, we cannot access the data. However, we have no any other way to access data from the cloud.
- Vendor lock-in is the biggest disadvantage of cloud computing. Organizations may face problems when transferring their services from one vendor to another. As different vendors provide different platforms, that can cause difficulty moving from one cloud to another.
- Cloud infrastructure is completely owned, managed, and monitored by the service provider, so the cloud users have less control over the function and execution of services within a cloud infrastructure.

CHAPTER 4

IMPLEMENTATION OF SYSTEM

4.1 INTRODUCTION

ALCOHOL DETECTION SECURITY:

- Alcohol detector is used for checking the concentration of alcohol in a sample by the help of alcohol sensor. Nowadays they are mainly used by traffic police. But we are proposed the alcohol detection in industries to prevent accidents. To check the alcohol concentration workers have to pass the checking device.

- The alcohol sensor which are used for calculating the alcohol content. This happens because alcohol doesn't get digested instead it is absorbed by the mouth. Thus some traces are always left even after several hours of drinking.

Fig 4.1.1 Alcohol Detection Security

TYPES OF ALCOHOL DETECTION SENSOR:

Breathalyser:

Uses a chemical reaction involving alcohol that produces a colour change. The first and probably best-known is the Breathalyser.

The Breathalyser device contains:

- A system to sample the breath of the suspect (mouth piece).

- Two glass vials containing the chemical reaction mixture.
- A system of photocells connected to a meter to measure the colour change associated with the chemical reaction.

To measure alcohol, a suspect breathes into the device. The breath sample is bubbled in one vial through a mixture of sulphuric acid, potassium dichromate, silver nitrate and water.

Fig 4.1.2 Breathalyser

Intoxilyser:

The Intoxilyser is a device that uses infrared (IR) spectroscopy, which identifies particles (Molecules) by their absorption of infrared light. Molecules are constantly vibrating, and these vibrations change when the molecules absorb IR light. The changes in vibration include the bending and stretching of various bonds. Each type of bond within a molecule absorbs IR at different wavelengths.

In the Intoxilyzer:

- A lamp generates a broadband (multiple-wavelength) IR beam.
- The broadband IR beam passes through the sample chamber and is focused by a lens onto a spinning filter wheel.
- The filter wheel contains narrow band filters specific for the wavelengths of the bonds in ethanol. The light passing through each filter is detected by the photocell, where it is converted to an electrical pulse.
- The electrical pulse is relayed to the microprocessor, which interprets the pulses and calculates the BAC based on the absorption of infrared light.

Fig 4.1.3 Intoxilyser

Alco sensor:

This Modern fuel-cell technology (which may power our cars and even our houses someday) has been applied to breath-alcohol detectors. Devices like the Alco sensor III and IV use fuel cells.

The Alco sensor III or IV uses a fuel cell with two platinum electrodes with an acid-electrolyte material between the electrodes. As the exhaled air from the suspect flows past one side of the fuel cell, the platinum oxidizes any alcohol in the air to produce acetic acid, protons and electrons. From the first electrode, electrons in the alcohol molecules flow through a wire to a meter which measures the electrical current and to the other platinum electrode. After protons are oxidized, a microprocessor measures the electrical current to calculate BAC.

It is against the law to drive while intoxicated, in all 50 states and the District of Columbia, the legal BAC limit is .08 per cent. These detectors are helpful tools for screening.

Fig 4.1.4 Alco Sensor

4.2 MODULE DESCRIPTION

ARDUINO UNO:

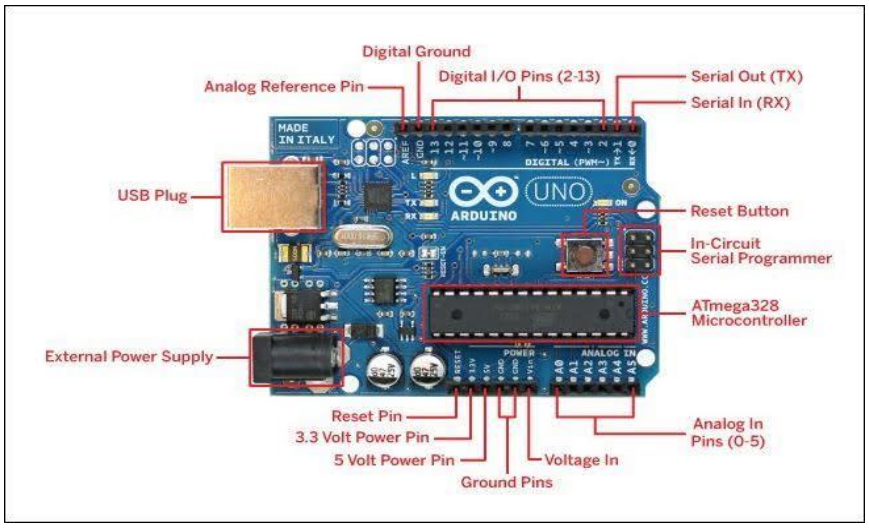

Fig 4.2.1 Arduino UNO

Arduino is a prototype platform (open-source) based on an easy-to-use hardware and software. It consists of a circuit board, which can be programed and ready-made software called Arduino IDE (Integrated Development Environment), which is used to write and upload the computer code to the physical board.

Arduino Uno is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

"Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board is the index of first in a series of USB Arduino boards, and the reference model for the Arduino platform.

ADVANTAGES:

- Inexpensive compared to other microcontroller platforms
- Cross-platform
- Simple, clear programming environment
- Well-suited with all kinds of in operation systems

TECHNICAL SPECIFICATIONS:

Microcontroller	ATmega328P-8 bit AVR family microcontroller
Operating Voltage	5V
Recommended Input Voltage	7-12V
Input Voltage Limits	6-20V
Analog Input Pins	6 (A0-A5)
Digital I/O Pins	14 (Out of which provide PWM output)
DC Current on I/O Pins	40 Ma
DC Current on 3.3V Pin	50 mA
Flash Memory	32KB (0.5 KB is used for bootloader)
SRAM	2KB
EEPROM	1KB
Frequency (clock speed)	16MHz

Table 4.2.1 Arduino technical specification

ARDUINO MICROCONTROLLER PIN DIAGRAM:

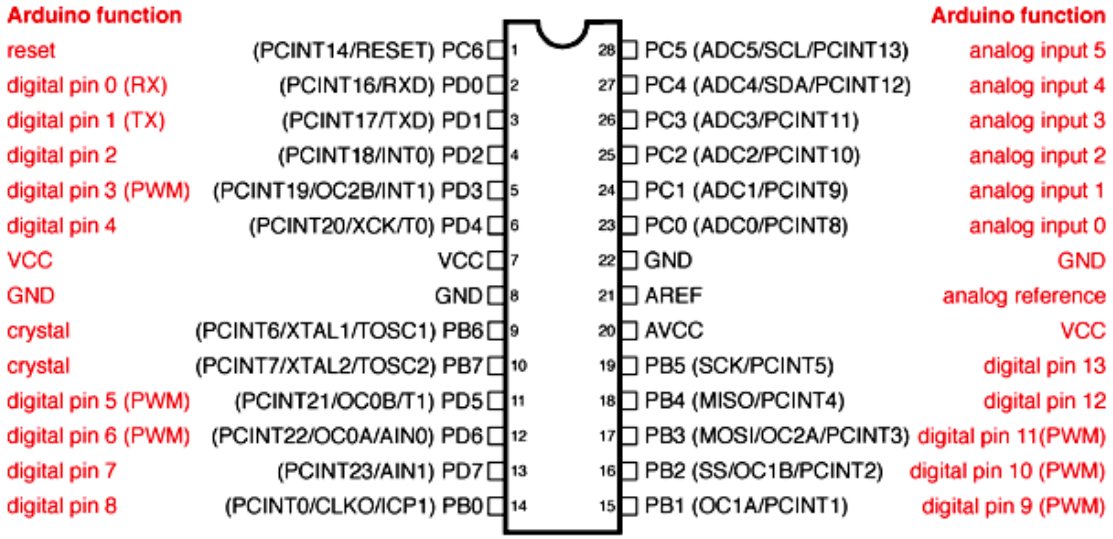

Fig 4.2.2 Arduino microcontroller pin diagram

NODE MCU:

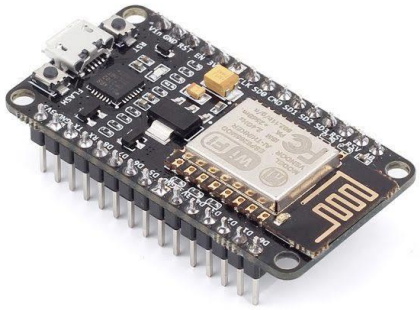

Fig 4.2.3 Node MCU

The NodeMCU (**N**ode **M**icro**C**ontroller **U**nit) is an open-source software and hardware development environment built around an inexpensive System-on-a-Chip (SoC) called the ESP8266. The ESP8266, designed and manufactured by Espressif Systems, contains the crucial elements of a computer: CPU, RAM, networking (WiFi), and even a modern operating system and SDK. NodeMCU is a low-cost open source and it initially included firmware which runs on the ESP8266 Wi-Fi and hardware which was based on the

ESP-12 module, WiFi Module chip that can be configured to connect to the Internet for Internet of Things (IoT) and similar Technology Projects.

The NodeMCU programming model is similar to that of Node.js, only in Lua. It is asynchronous and event-driven. Many functions, therefore, have parameters for call back functions.

TECHINCAL SPECIFICATION:

Microcontroller	ESP-8266 32-Bit
NodeMCU Model	Amica
NodeMCU Size	49mm x 26mm
Carrier Board Size	n/a
Pin Spacing	0.9”(22.86mm)
Clock Speed	80MHz
USB to Serial	CP2102
USB Connector	Micro USB
Operating Voltage	3.3V
Input Voltage	4.5V-10V
Flash Memory/SRAM	4MB/64KB
Digital I/O Pins	11
Analog Input Pins	1

Table 4.2.3 NodeMCU Technical Specifications

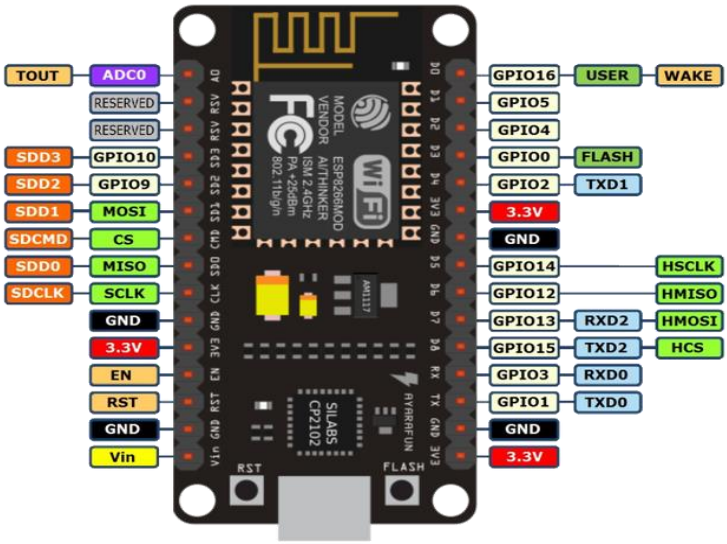

Fig 4.2.4 NodeMCU Pin out Configuration

ADVANTAGES:

- Cheap in cost
- Available of WiFi Transmission
- More compatible development environments
- Flexible Design and Enhanced Function
- Abundant Learning Resources
- Convenient Application Development
- Incentive program
- Active maker community

ALCOHOL SENSOR MQ3:

An alcohol sensor which is used to detects the alcohol gas in the air and an analog voltage is an output reading. This sensor can activate a power supply is less than 150 Ma to 5V. This sensor sensing range is from 0.04 mg/L to 4 mg/L, it is most probably suitable for breath analyzers. This module is made using Alcohol Gas Sensor MQ3. It is a low cost semiconductor sensor which can detect the presence of alcohol gases at concentrations from 0.05 mg/L to 10 mg/L. Its conductivity increases as the concentration of alcohol gases increases. It has high sensitivity to alcohol. This module provides both digital and analog outputs. MQ3 alcohol sensor module can be easily interfaced with Microcontrollers, Arduino

Boards, and Raspberry Pi etc. This alcohol sensor is suitable for detecting alcohol concentration on your breath, just like your common breathalyser. It has a high sensitivity and fast response time. Sensor provides an analog resistive output based on alcohol concentration.

Fig 4.2.5 Alcohol Sensor

Basic Pin Configuration of Alcohol Sensor:

The MQ-3 alcohol gas sensor consists of a total 6-pins including A, H, B, and the other three pins are A, H, B out of the total 6-pins we use only 4 pins. The two pins A, H are used for the heating purpose and the other two pins are used for the ground and power. There is a heating system inside the sensor, which is made up of aluminium oxide, tin dioxide. It has heat coils to produce heat, and thus it is used as a heat sensor. The below diagram shows the pin diagram and the configuration of the MQ-3 alcohol sensor.

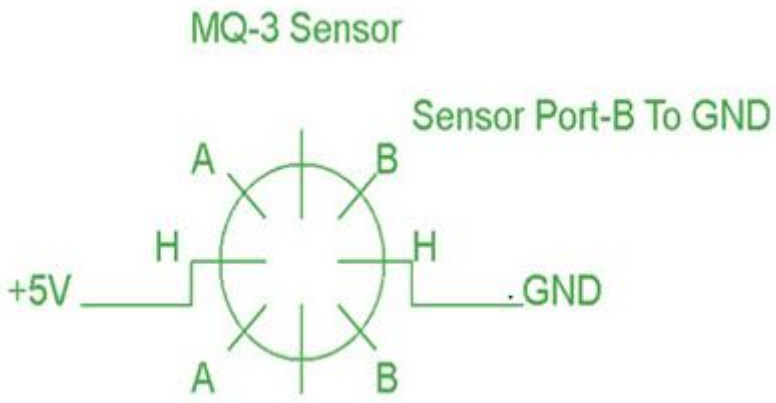

Fig 4.2.6 MQ3 Pin Configuration

Working Principle And Schematic Diagram:

The MQ-135 alcohol sensor consists of a tin dioxide (SnO2), a perspective layer inside aluminum oxide microtubes (measuring electrodes), and a heating element inside a tubular

casing. The end face of the sensor is enclosed by a stainless steel net and the backside holds the connection terminals. Ethyl alcohol present in the breath is oxidized into acetic acid passing through the heating element. With the ethyl alcohol cascade on the tin dioxide sensing layer, the resistance decreases. By using the external load resistance the resistance variation is converted into a suitable voltage variation.

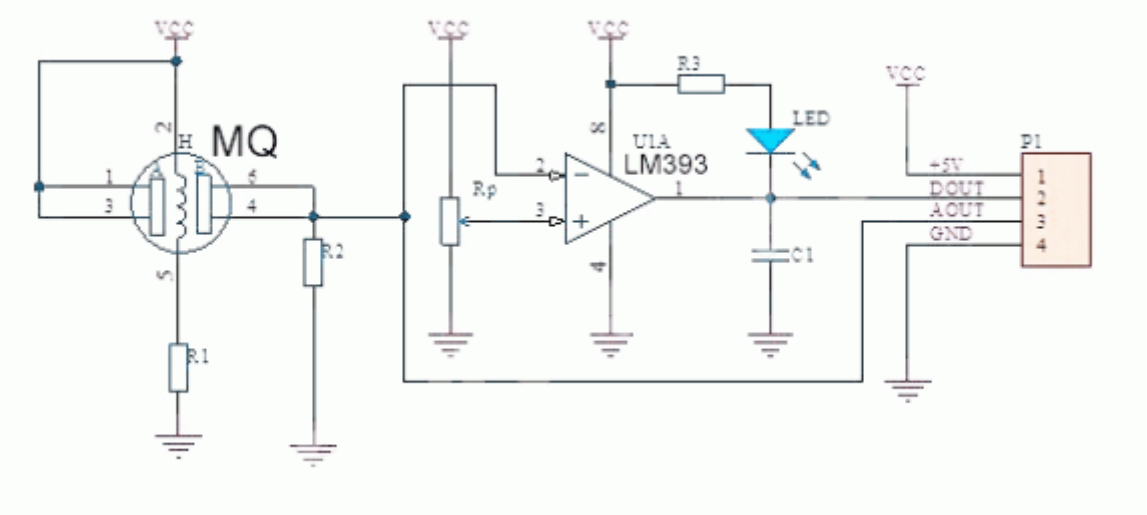

Fig 4.2.7 Schematic Diagram

FEATURES:

- High sensitivity to alcohol and small sensitivity to Benzene
- Fast response and High sensitivity
- Stable and long life
- Simple drive circuit
- 5V operation
- Simple to use
- Output sensitivity adjustable
- Analog output 0V to 5V
- Digital output 0V or 5V
- Low Cost

TECHNICAL SPECIFICATIONS:

Model No	MQ3
Sensor Type	Semiconductor
Detection Gas	Alcohol Gas
Concentration	0.4Mg/L-4mg/L
Supply Voltage	<24V
Heater Voltage	5V±0.1
Load Resistance	Adjustable
Heater Resistance	31Ω±3Ω
Heater Consumption	<900mW
Temperature Humidity	20℃±2℃

Table 4.2.5 Alcohol Sensor Technical Specification

LCD DISPLAY:

Fig 4.2.8 LCD Display

A Liquid Crystal Display (LCD) is fundamentally a presentation unit fabricated utilizing Liquid Crystal innovation. When we manufacture reality/true hardware based ventures, we need a medium/gadget to show yield esteems and messages. The most essential type of electronic showcase accessible is 7 Segment presentations – which have its own restrictions. The most generally utilized one is 16×2 LCD Module which can show 32 ASCII characters in 2 lines (16 characters in 1 line).

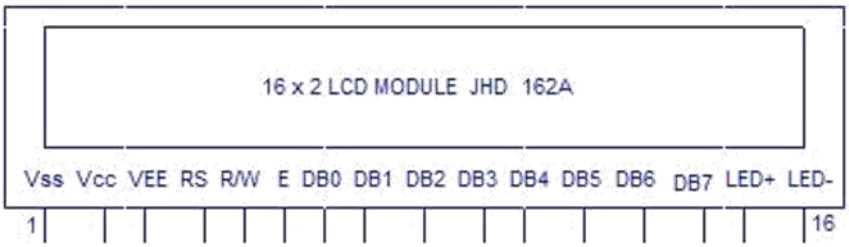

Fig 4.2.9 Interfacing LCD

Interfacing 16×2 LCD to Arduino Uno:

LCD modules structure an essential part in numerous Arduino based implanted framework plans. So the information on interfacing LCD module to Arduino is extremely basic in structuring inserted frameworks. This segment of the article is tied in with interfacing an Arduino to 16×2 LCD. JHD162A is the LCD module utilized here. JHD162A is a 16×2 LCD module dependent on the HD44780 driver from Hitachi. The JHD162A has 16 sticks and can be worked in 4-bit mode (utilizing just 4 information lines) or 8-bit mode (utilizing every one of the 8 information lines). Here we are utilizing the LCD module in 4-bit mode. In the first place, I will tell you the best way to show a plain instant message on the LCD module utilizing Arduino and afterward I have planned a helpful task utilizing LCD and Arduino – a computerized thermometer. Before going in to the subtleties of the venture, how about we view the JHD162A LCD module.

SERVO MOTOR:

Fig 4.2.10 Servo Motor

A servomotor is a rotary actuator or linear actuator that allows for precise control of angular or linear position, velocity and acceleration. It consists of a suitable motor coupled to a sensor for position feedback. It also requires a relatively sophisticated controller, often a dedicated module designed specifically for use with servomotors. Servomotors are not a specific class of motor, although the term servomotor is often used to refer to a motor suitable for use in a closed-loop control system. This often allows them to be used as an open-loop position control, without any feedback encoder.

BUZZER:

Fig 4.2.11 Buzzer

A buzzer or beeper is an audio signalling device, which may be mechanical, electromechanical, or piezoelectric. Typical uses of buzzers and beepers include alarm devices, timers and confirmation of user input such as a mouse click or keystroke. Buzzer is an integrated structure of electronic transducers, DC power supply, widely used in computers, printers, copiers, alarms, electronic toys, automotive electronic equipment, telephones, timers and other electronic products for sound devices. Active buzzer 5V Rated power can be

directly connected to a continuous sound, this section dedicated sensor expansion module and the board in combination, can complete a simple circuit design, to "plug and play."

Specifications:

- On-board passive buzzer
- On-board 8550 triode drive
- Can control with single-chip microcontroller IO directly
- Working voltage: 5V
- Board size: 22 (mm) x12 (mm).

JUMPER WIRES:

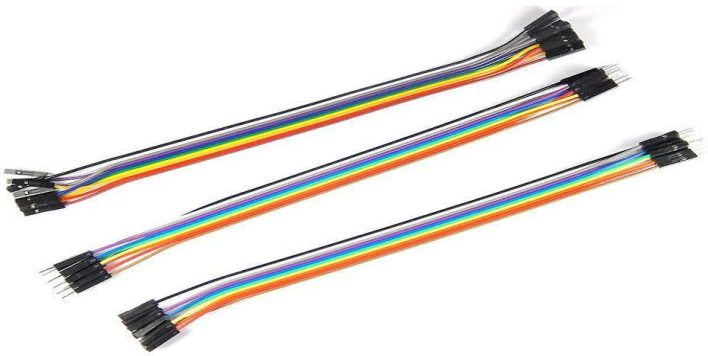

Fig 4.2.12 Jumper Wires

Jumper wires are simply wires that have connector pins at each end, allowing them to be used to connect two points to each other without soldering. Jumper wires are typically used with breadboards and other prototyping tools in order to make it easy to change a circuit as needed. Jumper wires typically come in three versions: male-to-male, male-to-female and female-to-female. The difference between each is in the end point of the wire. Male ends have a pin protruding and can plug into things, while female ends do not and are used to plug things into. Male-to-male jumper wires are the most common and it will use most often.

LED LIGHT:

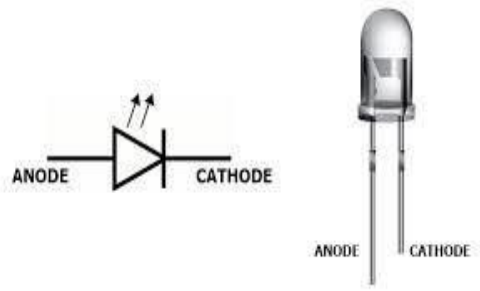

Fig 4.2.13 Led Light

A light-emitting diode (LED) is a semiconductor light source that emits light when current flows through it. Electrons in the semiconductor recombine with electron holes, releasing energy in the form of photons. Early LEDs were often used as indicator lamps, replacing small incandescent bulbs. LEDs have many advantages over incandescent light sources, including lower energy consumption, longer lifetime, improved physical robustness, smaller size, and faster switching.

4.3 SOURCE CODE

CLOUD CODE:

```
#define BLYNK_PRINT Serial
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
BlynkTimer timer;
char auth[] = "3dpnHoVeqVX-EdA9nlxSqQXfIFnUQaYR";
char ssid[] = "divya";
char pass[] = "divya007";

int n;

void setup()
{

  Serial.begin(115200);

  Blynk.begin(auth, ssid, pass);
  // You can also specify server:
  //Blynk.begin(auth, ssid, pass, "blynk-cloud.com", 80);
  //Blynk.begin(auth, ssid, pass, IPAddress(192,168,1,100), 8080);
  pinMode(16,OUTPUT);
  pinMode(5,OUTPUT);
  timer.setInterval(1000L, sendUptime);
}



void sendUptime()
{
  Blynk.virtualWrite(V1, n);
}
```

```
void loop()
{
  Blynk.run();
  timer.run();

  n=analogRead(A0);
  Serial.println(n);

  if(n>190)
  {
     digitalWrite(16,LOW);
    digitalWrite(5,HIGH);
    delay(2000);
  }

  if(n<190)
  {
      digitalWrite(16,HIGH);
      digitalWrite(5,LOW);
      delay(2000);
  }

}
```

ARDUINO CODE:

```
#include <LiquidCrystal_I2C.h>
LiquidCrystal_I2C lcd(0x27,16,2);
#include <SoftwareSerial.h>
SoftwareSerial mySerial(9, 10);

int buzzer = 13;
int GASA0 = A0;
int gasvalue;

void setup() {

 lcd.init();                    // initialize the lcd
 lcd.init();
 lcd.backlight();
 mySerial.begin(9600);
 Serial.begin(9600);
 pinMode(buzzer, OUTPUT);
 lcd.setCursor(3,0);
 lcd.print("welcome to");
 lcd.setCursor(1,1);
 lcd.print("Devoloper source");
 delay(5000);
}

void loop() {
  int analogSensor = analogRead(GASA0);
  int gasvalue=(analogSensor-50)/10;

  lcd.setCursor(0,0);
  lcd.print("GAS Level:");
  lcd.setCursor(10,0);
  lcd.print(gasvalue);
  lcd.setCursor(12,0);
  lcd.print("%");

  // Checks if it has reached the threshold value
  if (gasvalue >= 35)
  {
    lcd.setCursor(0,1);
```

```
  lcd.print("DANGER");
    tone(buzzer, 1);
  }
  else
  {
  lcd.setCursor(0,1);
  lcd.print("NORMAL");
    noTone(buzzer);
  }
  delay(50);
  lcd.clear();
}
```

4.4 TEST CASES

cloud | Arduino 1.8.10

File Edit Sketch Tools Help

cloud §

```
#define BLYNK_PRINT Serial
#include <ESP8266WiFi.h>
#include <BlynkSimpleEsp8266.h>
BlynkTimer timer;
char auth[] = "3dpnHoVeqVX-EdA9nlxSqQXfIFnUQaYR";
char ssid[] = "divya";
char pass[] = "divya007";

int n;

void setup()
{

  Serial.begin(115200);

  Blynk.begin(auth, ssid, pass);
  // You can also specify server:
  //Blynk.begin(auth, ssid, pass, "blynk-cloud.com", 80);
  //Blynk.begin(auth, ssid, pass, IPAddress(192,168,1,100), 8080);
  pinMode(16,OUTPUT);
  pinMode(5,OUTPUT);
  timer.setInterval(1000L, sendUptime);
}


void sendUptime()
{
  Blynk.virtualWrite(V1, n);
}
```

Done Saving.

Fig 4.4.1 Sample Cloud Code

The above picture shows how the Cloud code tested with the help of Arduino IDE software.

Fig 4.4.2 Sample Arduino Code

The above picture shows how the Arduino code tested with the help of Arduino IDE software.

CHAPTER 5

RESULT AND DISCUSSION

5.1 SNAPSHOTS OF PROJECT

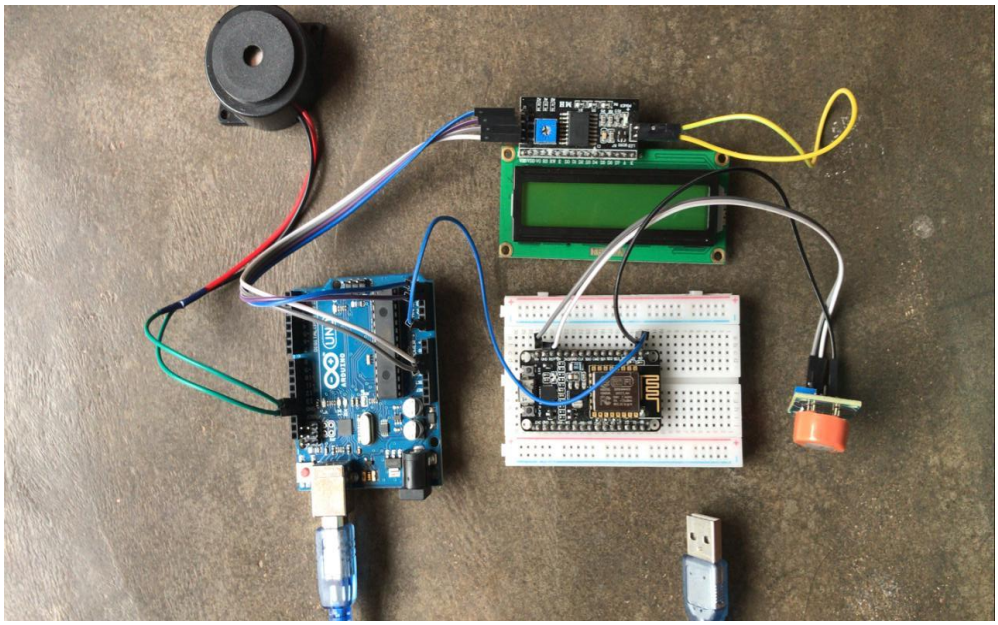

Fig 5.1.1 Hardware of the project

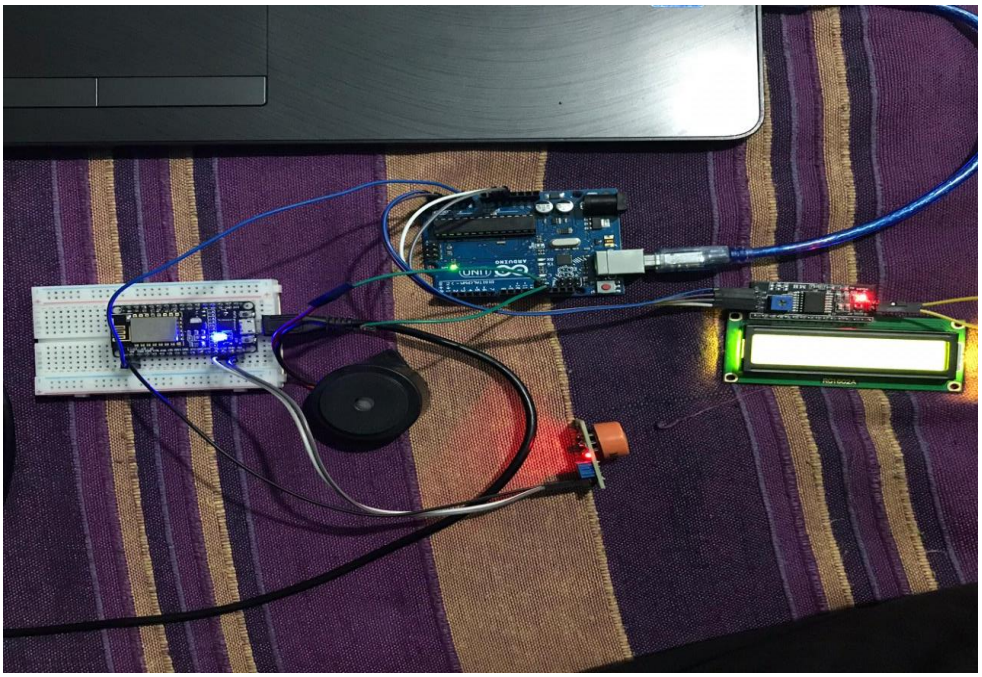

Fig 5.1.2 Power supply given to device

The above two pictures shows the hardware connections and power supply given to the system.

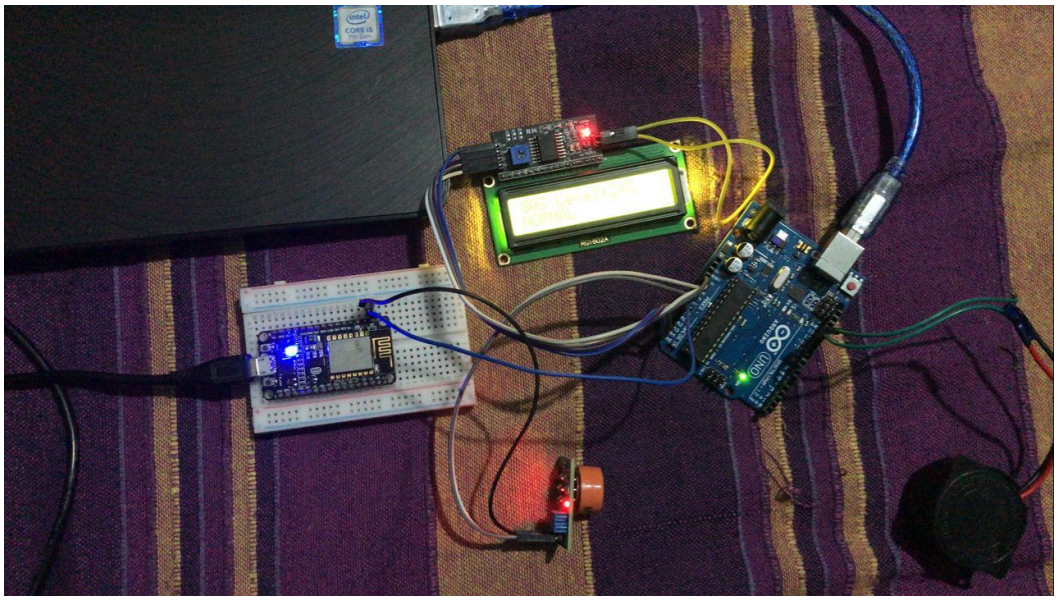

Fig 5.1.3 Sensing Gas

The above picture shows how the MQ3 sensor works.

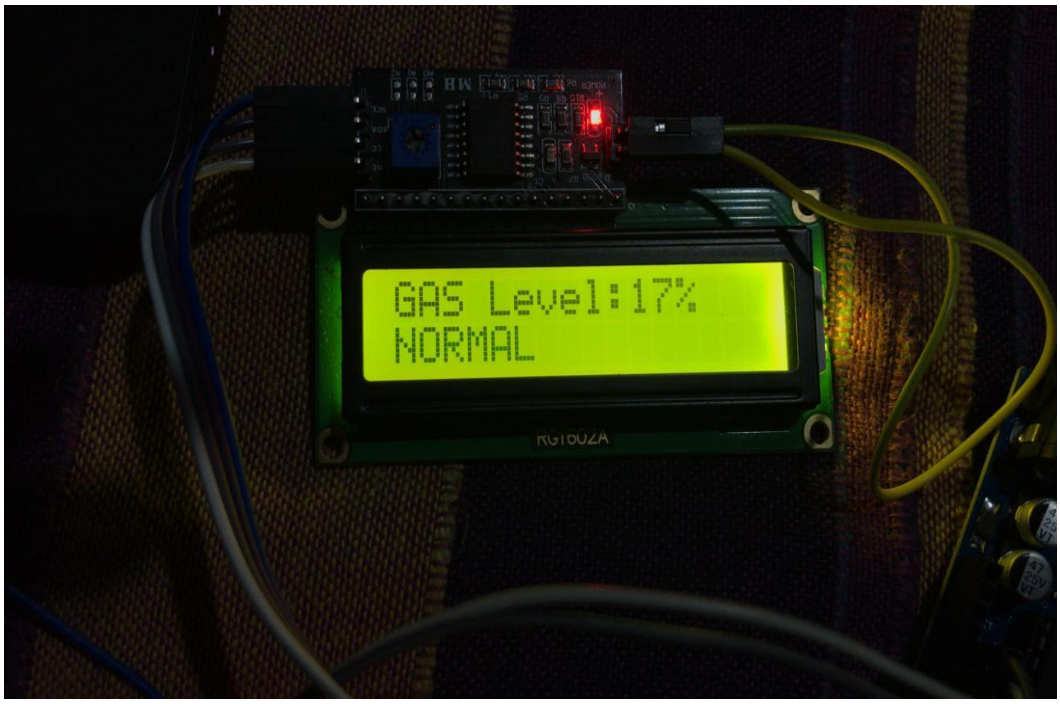

Fig 5.1.4 No Alcohol Detected

The above picture shows the gas level is 17% and NORMAL Because Alcohol Detected. And in this we showed LCD Display.

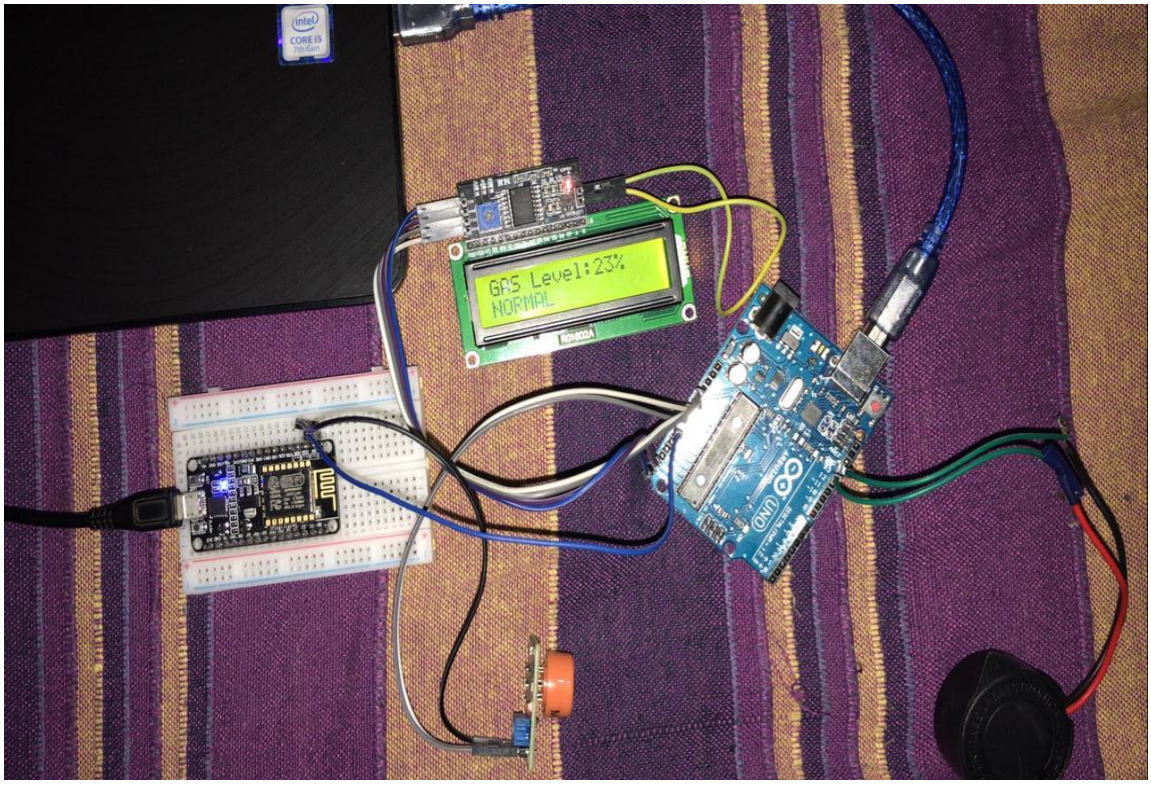

Fig 5.1.5 Gas Level (Normal)

The above picture shows that we have sensed again it shows gas level is 23% and NORMAL on LCD display. And in this we showed entire system.

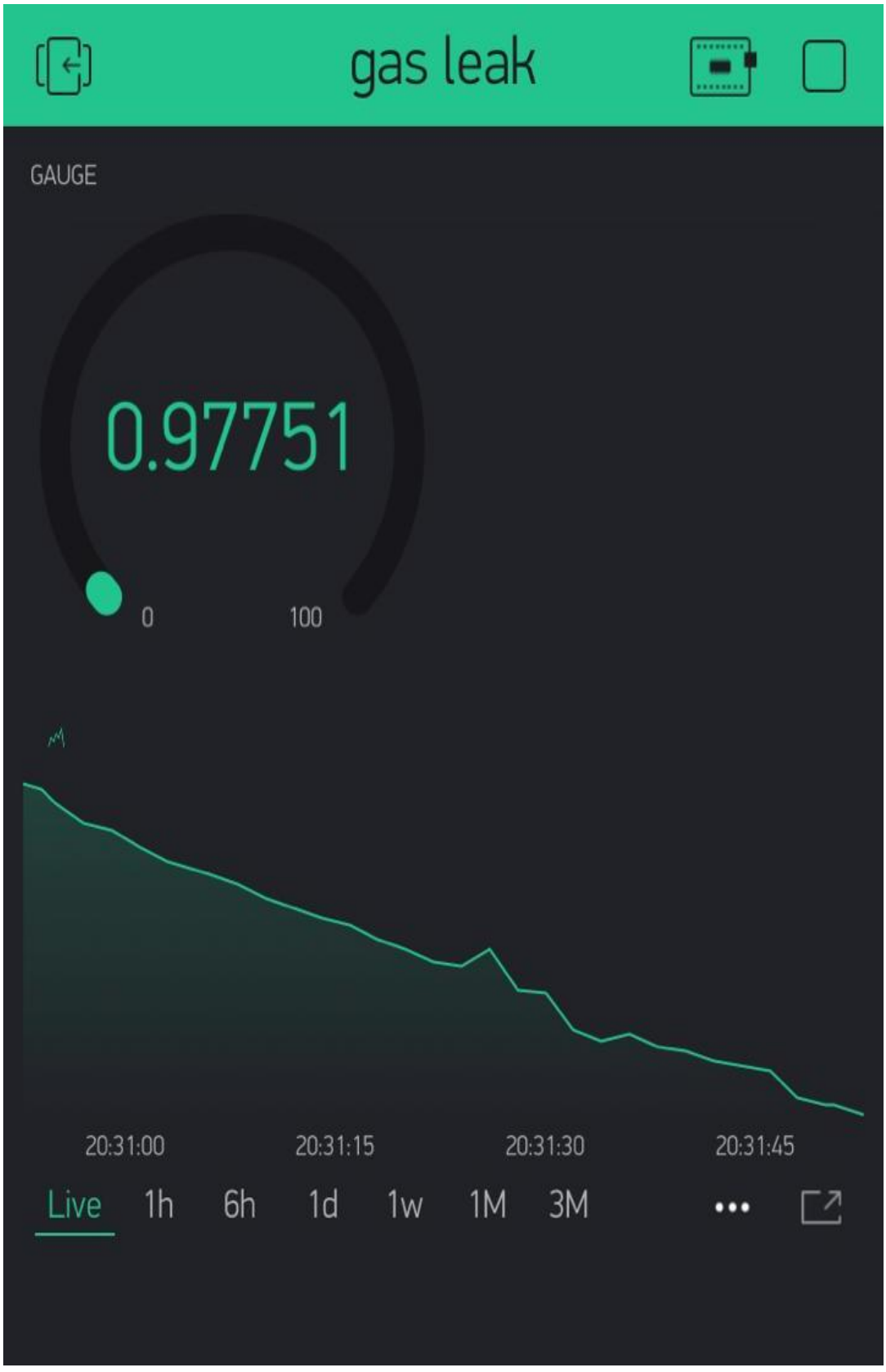

Fig 5.1.6 Cloud at initial stage

The above picture shows how the cloud will be at initial stage before sensing.

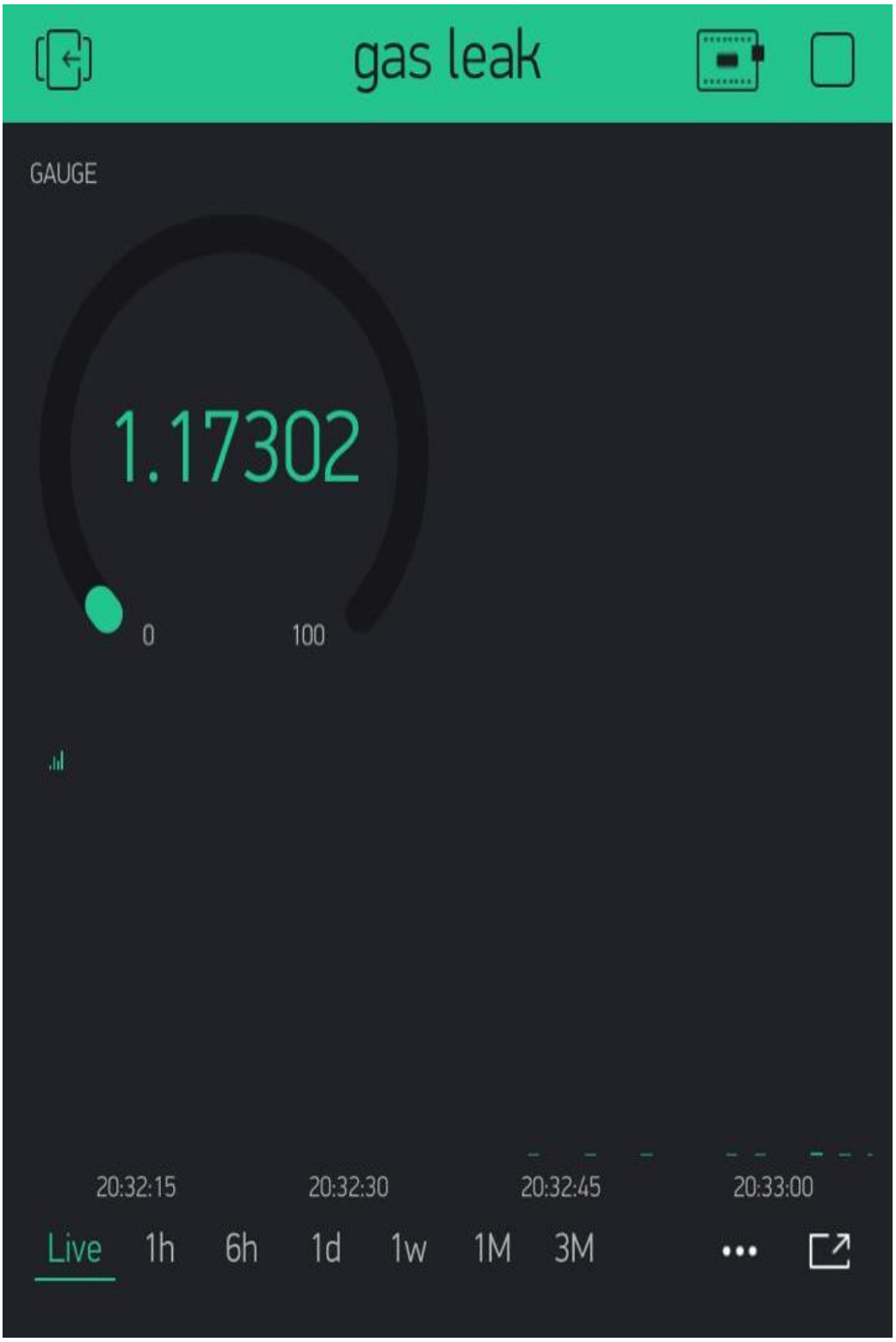

Fig 5.1.7 Cloud at normal stage

The above picture shows how the cloud will be at normal stage after no alcohol detected.

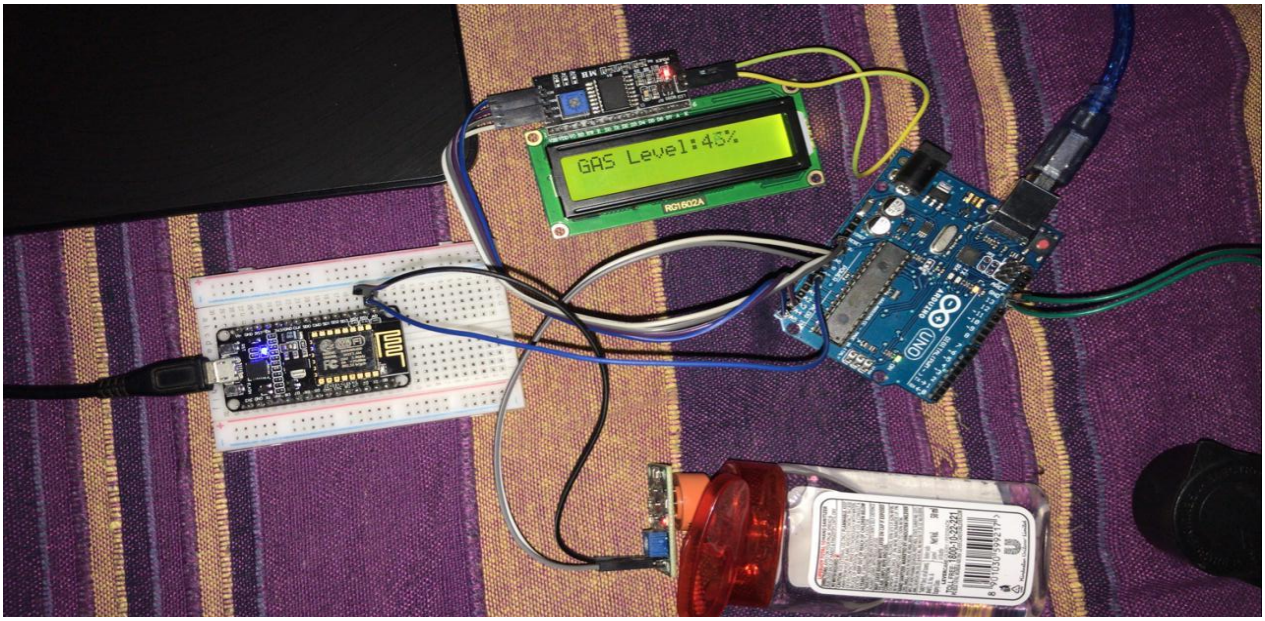

Fig 5.1.8 Detects Alcohol

In the above picture the alcohol sensor sensing the alcohol (from the hand wash liquid).

Fig 5.1.9 Alcohol Detected

The above picture shows the gas level is 44% and DANGER Because Alcohol Detected. And in this we showed LCD Display.

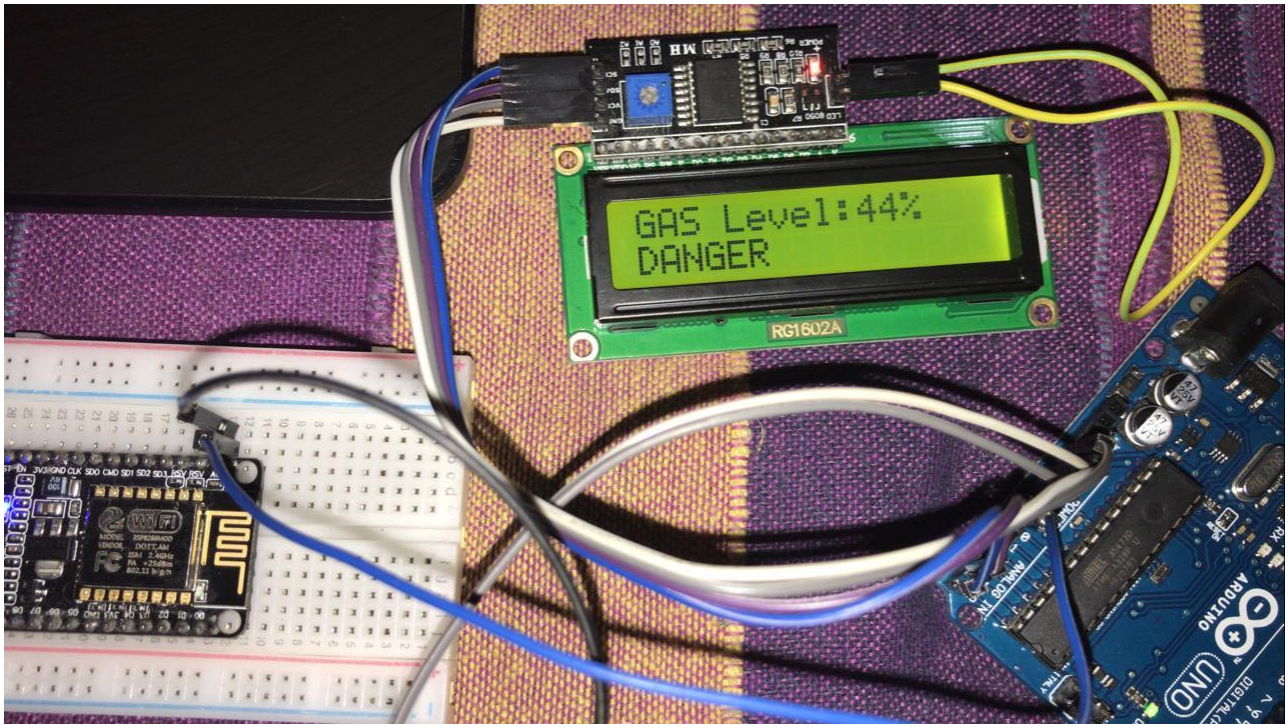

Fig 5.1.10 Gas Level (Danger)

The above picture shows that we have sensed again it shows gas level is 44% and DANGER on LCD display. And in this we showed entire system.

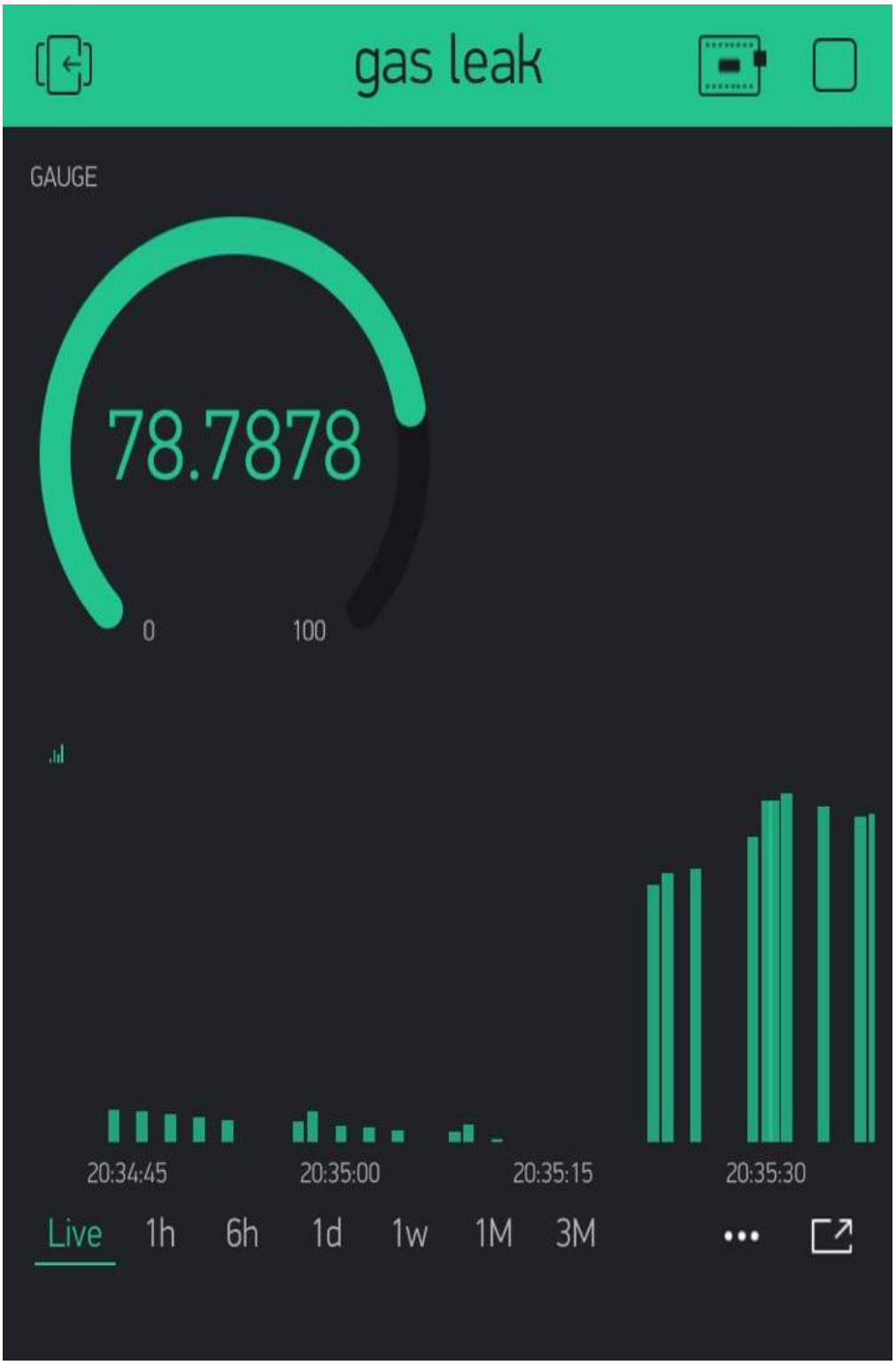

Fig 5.1.11 Cloud at Danger stage

The above picture shows how the cloud will be at normal stage after no alcohol detected.

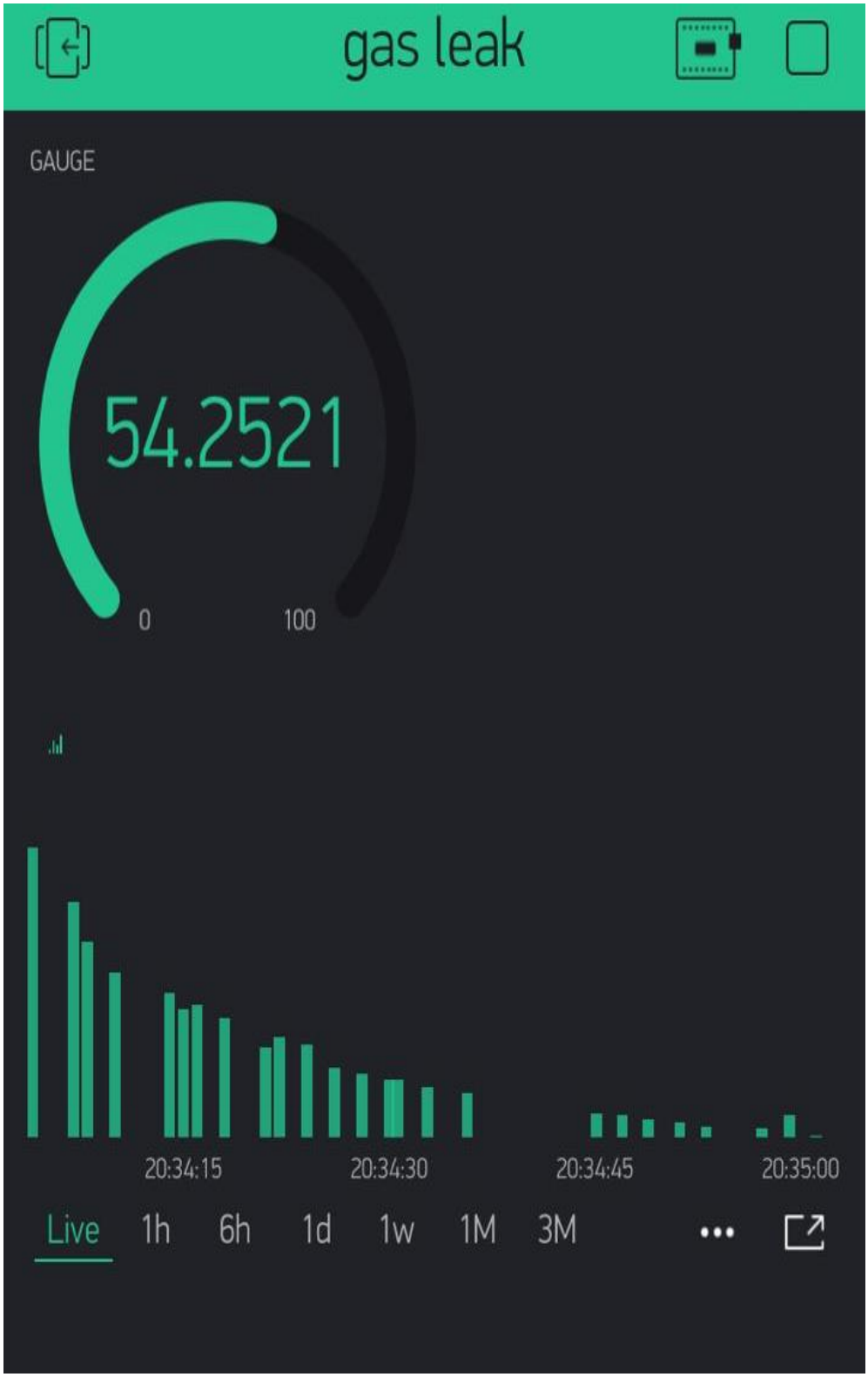

Fig 5.1.12 Decreases gradually from danger stage

The above picture shows how the graph decreases gradually from the high gas level (danger stage).

CHAPTER 6

CONCLUSION AND FUTURE WORK

6.1 CONCLUSION

The complete analysis of this project is shown above, and it will be implemented in hardware components. The simplicity, cost efficiency of this system enables this system as very useful. By this project we create awareness of the alcohol detection in industries for workers to control the accidents. So that they can also make use of this security system and accidents happens due to workers drunk will not be happen.

6.2 FUTURE WORK

The future scope of the proposed system is used to implement in big industries, offices, universities, etc. also planning to add the Microwaves signal detector to restrict the workers bringing the mobile phones.

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