A Project Report
On

ALCOHOL SENSING AUTOMATION ENGINE LOCKING SYSTEM USING ARDUINO

Submitted in partial fulfillment of the requirement
for the award of the degree of

Bachelor of Technology

In

ELECTRONICS AND COMMUNICATION ENGINEERING

By

K YUGANDHAR	**19751A0468**
K AMARANADHA REDDY	**19751A0474**
M V PAVAN KUMAR	**19751A0498**
N PURUSHOTHAM	**19751A04B9**

Under the Guidance of

Dr/Mr./Mrs./Ms. _____, MTech.,

Designation such as PROFESSOR/ASSOCIATE PROFESSOR/ASSISTANT PROFESSOR, DEPT. OF ECE

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES

(Autonomous)

Affiliated to J.N.T.U.A, Anantapuramu & NBA Accredited

CHITTOOR-517 127

(2019-2023)abs

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES

(Autonomous)

Affiliated to J.N.T.U.A, Anantapuramu & NBA Accredited

CHITTOOR-517 127

CERTIFICATE

This is to certify that the project report entitled **"ALCOHOL SENSING AUTOMATION ENGINE LOCKING SYSTEM USING ARDUINO"** that is being submitted by **Mr. K YUGANDHAR (19751A0468), Mr. K AMARANADHA REDDY (19751A0474), Mr. M V PAVAN KUMAR REDDY (19751A0498), Mr. N PURUSHOTHAM (19751A04B9)** in partial fulfillment for the award of the Degree of Bachelor of Technology in ELECTRONICS AND COMMUNICATION ENGINEERING to the Jawaharlal Nehru Technological University Anantapuramu, Anantapuramu is a record of bonafide work carried out under my guidance and supervision. The results embodied in this project report have not been submitted to any other University or Institute for the award of any degree.

Mr. _____ MTech.
Designation as in front page
Internal Guide

Dr. K. GOPI, M.E., Ph.D.
Head of the Department
Dept. of ECE

Submitted for University Examination (Viva-Voce) held on_____

Internal Examiner

External Examiner

ACKNOWLEDGEMENT

The successful completion of this project work was made possible with the help and guidance received from various quarters. I would like to avail this opportunity to express our sincere thanks and gratitude to all of them.

I would like to express the heartfelt gratitude to our Management, Chairperson **Sri. K. RANGANATHAM GARU** for providing excellent institutional support to complete this project.

I would like to express the profound gratitude to our beloved principal **Dr. M. SARVANAN, PhD,** for giving us the opportunity to embark upon this course and make use of the facilities available in the college.

I pay my sincere note of felicitation to **Dr. K. GOPI, Ph. D,** Professor & Head of the ECE Department for providing excellent departmental support as well as motivation which enhance the thrust to complete the project.

I thank my project guide _____ for his valuable guidance, support and offering necessary material and willingly giving us advice whenever needed.

Finally I thank all the teaching faculty and non-teaching staff of the Department of Electronics and Communication Engineering for giving their advices and their help during the course of our project work as well as studies.

K. YUGANDHAR **19751A0468**
K. AMARANADHA REDDY **19751A0474**
M. V. PAVAN KUMAR REDDY **19751A0498**
N. PURUSHOTHAM **19751A04B9**

Course Outcomes for project work

On completion of project work we will be able to,

CO1. Demonstrate in-depth knowledge on the project topic.
CO2. Identify, analyze and formulate complex problem chosen for project work to attain substantiated conclusions.
CO3. Design solutions to the chosen project problem.
CO4. Undertake investigation of project problem to provide valid conclusions.
CO5. Use the appropriate techniques, resources and modern engineering tools necessary for project work.
CO6. Apply project results for sustainable development of the society.
CO7. Understand the impact of project results in the context of environmental sustainability.
CO8. Understand professional and ethical responsibilities while executing the project work.
CO9. Function effectively as individual and a member in the project team.
CO10. Develop communication skills, both oral and written for preparing and presenting project report.
CO11. Demonstrate knowledge and understanding of cost and time analysis required for carrying out the project.
CO12. Engage in lifelong learning to improve knowledge and competence in the chosen area of the project.

CO – PO MAPPING

COs \ POs	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	√											
CO2		√										
CO3			√									
CO4				√								
CO5					√							
CO6						√						
CO7							√					
CO8								√				
CO9									√			
CO10										√		
CO11											√	
CO12												√

Evaluation Rubrics for Project work:

Rubric (CO)	Excellent (Wt = 3)	Good (Wt = 2)	Fair (Wt = 1)
Selection of Topic (CO1)	Select a latest topic through complete knowledge of facts and concepts.	Select a topic through partial knowledge of facts and concepts.	Select a topic through improper knowledge of facts and concepts.
Analysis and Synthesis (CO2)	Thorough comprehension through analysis/ synthesis.	Reasonable comprehension through analysis/ synthesis.	Improper comprehension through analysis/ synthesis.
Problem Solving (CO3)	Thorough comprehension about what is proposed in the literature papers.	Reasonable comprehension about what is proposed in the literature papers.	Improper comprehension about what is proposed in the literature.
Literature Survey (CO4)	Extensive literature survey with standard references.	Considerable literature survey with standard references.	Incomplete literature survey with substandard references.
Usage of Techniques & Tools (CO5)	Clearly identified and has complete knowledge of techniques & tools used in the project work.	Identified and has sufficient knowledge of techniques & tools used in the project work.	Identified and has inadequate knowledge of techniques & tools used in project work.
Project work impact on Society (CO6)	Conclusion of project work has strong impact on society.	Conclusion of project work has considerable impact on society.	Conclusion of project work has feeble impact on society.
Project work impact on Environment (CO7)	Conclusion of project work has strong impact on Environment.	Conclusion of project work has considerable impact on environment.	Conclusion of project work has feeble impact on environment.
Ethical attitude (CO8)	Clearly understands ethical and social practices.	Moderate understanding of ethical and social practices.	Insufficient understanding of ethical and social practices.
Independent Learning (CO9)	Did literature survey and selected topic with a little guidance	Did literature survey and selected topic with considerable guidance	Selected a topic as suggested by the supervisor
Oral Presentation (CO10)	Presentation in logical sequence with key points, clear conclusion and excellent language	Presentation with key points, conclusion and good language	Presentation with insufficient key points and improper conclusion
Report Writing (CO10)	Status report with clear and logical sequence of chapters using excellent language	Status report with logical sequence of chapters using understandable language	Status report not properly organized
Time and Cost Analysis (CO11)	Comprehensive time and cost analysis	Moderate time and cost analysis	Reasonable time and cost analysis

ABSTRACT

ABSTRACT :

The main purpose behind this project is **"DRUNK DRIVING DETECTION".** Now a day's many accidents happening because of the alcohol consumption of the driver or the person who is driving the car. The drunk driving is a major reason of accident in almost all countries all over the world. Alcohol detection in car project is designed for the safety of the people seating inside the car. This project should be installed inside the vehicle. In this project we have developed an automatic engine locking system. The input for the system is alcoholic breath. The controller waits for the output from alcohol sensor. Here a stimulating process activated using a dc motor through the freewheeling diode & complete process is under the supervision of an intelligent Atmega 328microcontroller. Even through efficient set up requirements have been adopted for the traditional methods, where in this process this could be a better idea of interesting the complete state of the art design into the system. Most of traditional systems are likely to be more dependent on the operator & it may fail due to various factors like battery life, power consumption as well as the unavoidable external disturbances. Thus drunk driving is a major reason of accidents in almost all countries all over the world. Alcohol detector in car project is designed for the safety of the people seating inside the car. If there are many traces of alcohol above the set limit then the engine will be locked by the system and at the same time the buzzer will on so, that we can avoids accidents.

KEYWORDS: Arduino UNO, MQ3 Alcohol Sensor, DC motor, LCD Display, Buzzer.

CHAPTER 1

INTRODUCTION

CHAPTER-1

INTRODUCTION

The current scenario shows that the most of the road accidents are occurring due to drunk-driving. The drivers who drink alcohol are not in an stable condition and so, rash driving occurs on highway which can be risky to the lives of the people on road, the driver inclusive. The enormity of the dangerous driving transcends boundary. The laws in India are currently prohibiting drivers to drink and drive so that the fine can stop them to drink and drive. Whatsoever, effective observation of inebriated drivers could be a challenge to the policemen and road safety officers, the rationale for this stems from the natural inability of citizenry to be present additionally as state among identical house and time. This restricted ability of enforcement agents undermines each manual effort geared toward edge drink-driving. There is therefore the need for an alcohol detection system that can function without the restriction of space and time.

The Indian Ministry of Statistics reported thousands of road accidents in 2016. Though the report declared speed violation is the foremost reason for these accidents, it will safely be inferred that almost all of the cases are because of driver's unstable condition caused by drivers becoming drunk before they drive. The investigation done by the Planet Health Organization in 2008 shows that concerning 50%-60% of traffic accidents square measure associated with drink-driving. Moreover, WHO information on road traffic deaths disclosed 1.25 million traffic deaths were recorded globally in 2013 with the low- and middle-income countries having higher fatality rates per a 100K population (24.1% and 18.4% respectively), information collected showed that several of economic vehicles drivers in Bharat admitted to drinking alcohol throughout operating days.

Almost all drivers, particularly business and serious duty trucks drivers interact in drinkdriving, which may result in accident. Bharat sets a legal limit of 30mg/100mL blood alcohol concentration (BAC), any level higher than that's same to be ineligible. The BAC depicts the amount of alcohol in an exceedingly sure volume of blood. It's measured as either grams of alcohol per metric capacity unit of blood or milliliters of blood, (mg/ml, utilized in a lot of of

Europe). For BAC level from 0.4 to 0.6, drivers feel dazed/confused or otherwise disoriented, and it's typically not safe for a driver to drive a vehicle beneath such condition. Also, BAC level for 0.7 to 0.8 makes a driver's mental, physical and sensory functions to be severely impaired. At this stage, a driver is inactive and incapable of driving. BAC level of 0.2 to 0.3 continues to be not safe however the motive force still. So, there is need of such system which can reduce the number of road accidents caused due to drunk driving

Problem Statement

The factor of vehicle compactness on the road increased dramatically because of the population in Ethiopia has been increasing rapidly years by years. Moreover the improvement in Ethiopia living standard has contributed to the increasing number of vehicle on the road (private vehicle). These factors are leading to a lot of road accidents. Some of the cases of these road accidents may happen when there are drunken driver who driving in dangerous condition. At present the death causes due to the drunken driver have increased radically. Tramc accidents caused by dnmk drivers not only causes the fatalities of life but also a distraction of the vehicle instrument. However, an effective apparatus for preventing such kinds of accidents has not yet been developed in our country. Due to this problem our project to developed alcohol sensing alert with engine locking.

Objective of the Project :

General Objective

The main general objective of our project to design and stimulate alcohol sensmg alert with engine locking.

Specific Objective

To model the mathematical of DC motor
+ To design the circuit on the proteus Software
# To develop or write the program of alcohol sensor on Arduino Software
+ To simulate alcohol sensing alert with engine locking.

Significance of the project

This system can reduced number of alcohol-related crashes, Reduced number of injuries and fatalities caused by alcohol-related crashes, Reduced damage to property from alcohol-related crashes, Increases drivers safety, prevent road accident and Frequent accident caused by drunk driver which results human fatalities and material distraction.

Engine Locking System through Alcohol Detection project can be used in various vehicles for detecting whether the driver has consumed alcohol or not. This can also be used in various companies, organizations mmes to detect alcohol consumption of employees.

Scope and limitation of our project

Scope of our project

- The Proposed System of an Automatic Locked Control System of Vehicle for Dlunken Driver will to assure safety of lives and to prevent material distraction when installed with every vehicle by maintaining its real tune operation. This System not only deals With component monitormg, does even more than that like sending message to the traffic police station to indicate its status and take another opportunity to run the activity safely.

- Alcohol detection are the vital and of great importance from the perspective of passenger safety and tramc safety. Impact detection and notification is also one of the lifesaving and critical information provider system

Limitation of our project

Despite attempting to conduct the project, we had challenges on the following:

- Lack of enough time
- Lack some devices in the software library
- Lack of hardware materials(no practice of Implementation or prototype of the design)

CHAPTER 2

LITERATURE REVIEW

CHAPTER 2

LITERATURE REVIEW

A) The writer has put forward a technique which utilizes GPS and GSM to ascertain alcohol but this technique is very expensive,but the expenses can be cut off to a great extent. In this project a siren is being used which is highly economical, and can keep people in close proximity vigilant.

B) Wearing smart helmet to prevent any mishap is suggested by writer which have certain deficiencies. Firstly restrictions on the use of helmets to only 2 wheelers. Secondly, microcontrollers are software based mega system in comparison to the economical siren that are open source hardware.

C) Composite health monitoring and sensors based on infrared are utilized to ascertain alcohol as talked about by writer but the chance of false alarm can't be avoided in this system, because minute change in some situations can result in false alarm but in our project use of required technology makes it more authentic.

D) To prevent the mishap of drunken driving writer have used PIC16F877A microcontroller which is an outdated system and expensive one also which restrains its use to only certain class of society whereas we are using Arduino and Uno microcontroller which is advanced as well as economical.

E) Worrying about the drunken driving the writer suggests the system to

overcome the issue but using mQ2 alcohol sensor has come flames .MQ2 alcohol sensor is not authentic and raises the chance of false alarm while we have used MQ3 which is highly authentic.

F) To cope with helmet negligence and alcohol detection simultaneous the writer proposed a system which is very complicated and use of P89V57RD2 microcontroller makes it highly expensive also this system can only be equipped with 2 wheelers whereas ,Aurdino uno microcontroller is economical as well as can be equipped with any class of vehicle making it more authentic and successful.

As there is no safety for people on road, death rate in India and all over the world are increasing because of road accidents with the issue of drunk and drive[1]. This work can be implemented in different vehicle for the detection to know whether the driver is alcohol consumption or not.As this system can also be used in many companies, organization to detect, whether the employees is alcohol consumption. Drunk and drive or not in stable condition and rash drive which is inconvenience for other Road user. As drunk and drive's is major problem in almost all over world. This work has an compact circuitry built around falls version, the arduinouno in which program is developed in the embedded system. This system should be fixed or installed in the vehicle itself and it is controlled by RF communication. Where the software receives a information sent by microcontroller when alcohol is detected.

CHAPTER 3

PROPOSED APPROACH

CHAPTER 3

PROPOSED APPROACH

This project started with getting idea and concept of alcohol sensing alert with engine locking and reading some literature reviews. The methodology of the project includes a different number works that are done to achieve the goal of the system. In our work we can consider different electronic and electromechanical materials that can perform our tasks. There is list of material used. Arduino controller, alcohol sensor, DC driver, light emitting diode ,liquid crystal display, buzzer, Engine and power supply. Electronics material this all devices integrated to make a good and safe car. This electronic devices embedded to the car dashboard, there also need software device to program Arduino controller. the procedure of methodology listed below.

Alcohol detection system. In this system we have used MQ3 alcohol sensor to detect the alcohol level. The alcohol sensor is connected to the Arduino controller to send the level of alcohol, if the Arduino receive any signal that comes from the MQ3 it check two conditions that are the engine is start or not. If the engine is not Stan it energized the relay and isolates the starter key to the engine so the engine doesn't start else the engine start and detect alcohol first alert the alarm for 20 second using sound buzzer that connect to the Ardiuno then close the fuel valve slowly mstantly it switch on the red led lamp to close the valves we use servo motor, after some delay or if the car approach minimum speed the break valve open and the yellow led lamp blink at the same time in this time we set two option that are usmg speed sensor(Speedo meter) to sense the speed else there is no speed sensor only use servo motor with some delay if this conditions done the car become at rest(stops) then the relay energized and isolate the start key and the engine.

Block diagram

We use an alcohol sensor circuit along with LCD display and a buzzer alarm. Our system first uses the alcohol sensor in order to detect alcohol. The sensor provides analog output. This analog output is now provided to the microcontroller for further processing. B ased on the input the microcontroller calculates the percentage of alcohol and displays the same on an LCD display

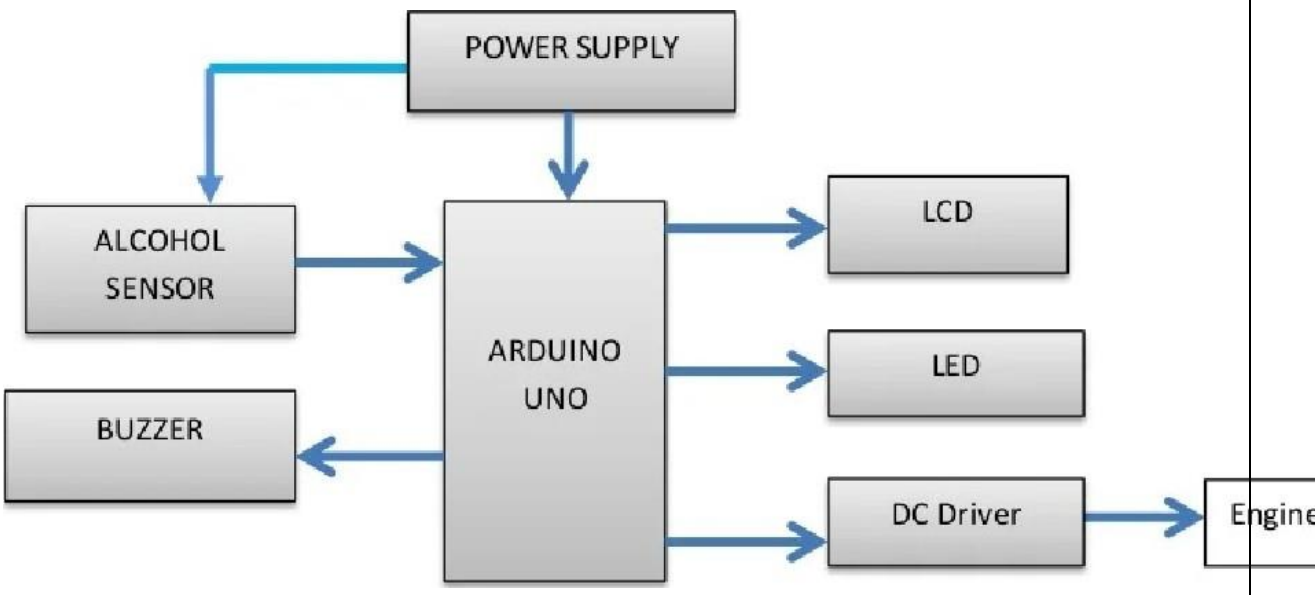


Figure3. 2 Block diagram

Flow chart of the system

This flow chart below shows the mterconnection of various components or hardware and their sequential operation when the sensor become active it senses the amount of alcohol taken by the driver and this data is processed or analysis by the controller then after the controller initiates a command signal and the other components are activated based on the present data they received from the Arduino.

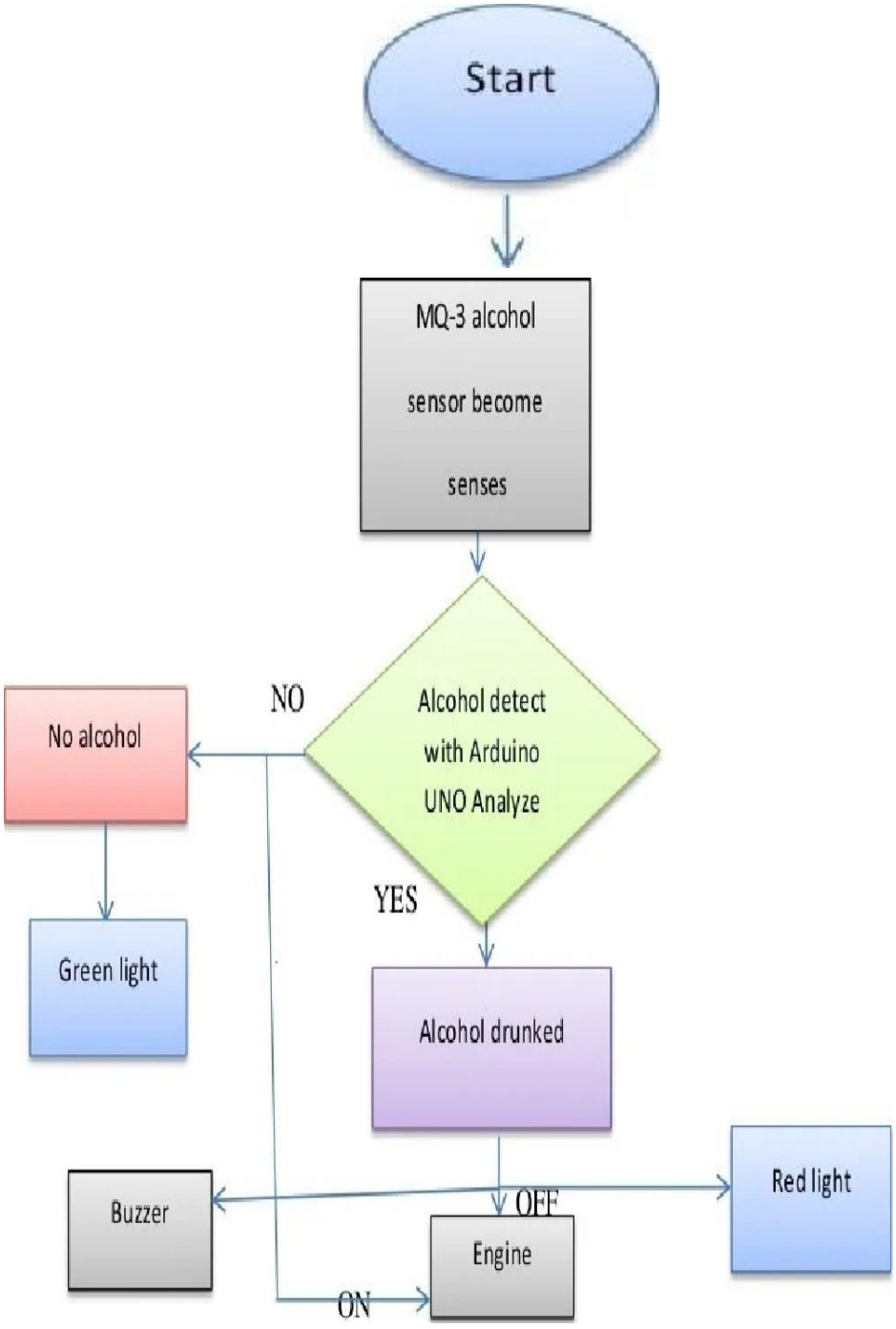


Fig : design of system flow chart

CHAPTER 4

COMPONENT DESCRIPTION

CHAPTER 4

COMPONENT DESCRIPTION

HARDWARE REQUIREMENTS

- Power Supply
- Arduino UNO
- MQ3 Alcohol Sensor
- DC Motor
- Buzzer
- LCD display
- I2C Module
- Jumpers
- LED
- SWITCH

SOFTWARE REQUIREMENTS

- Arduino IDE
- Embedded C Programming

Arduino Uno Board – Full Description

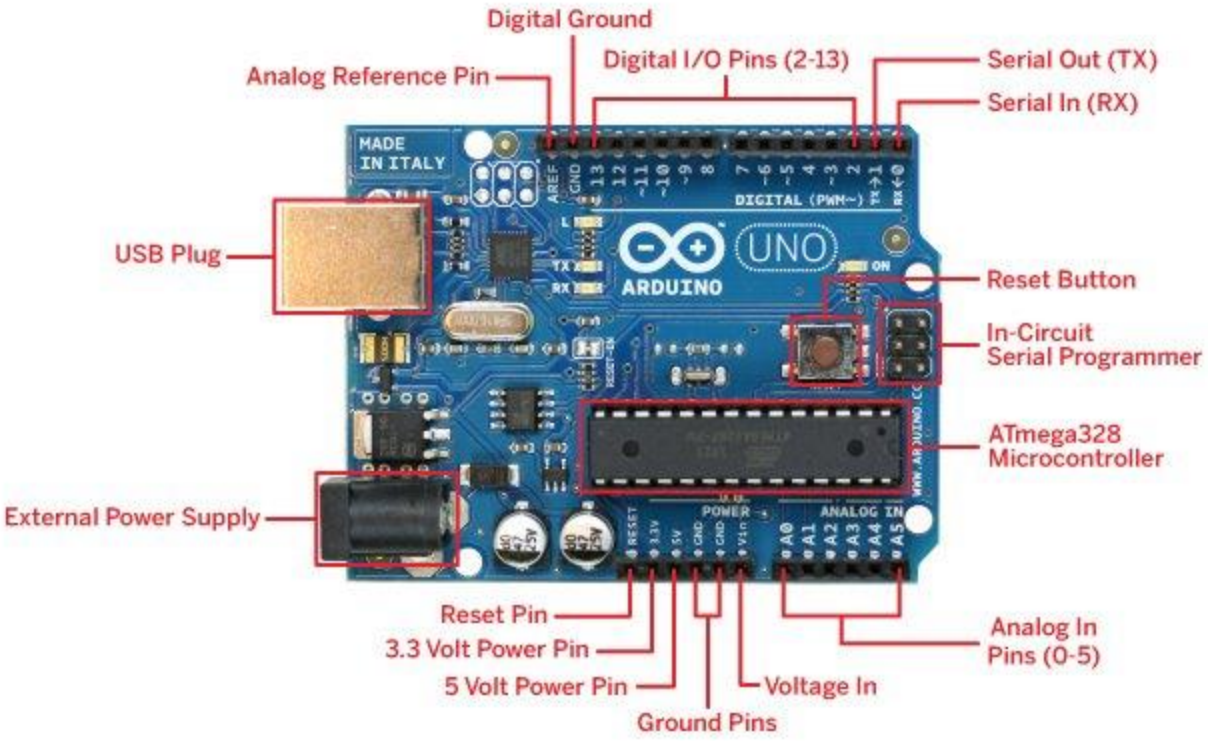


Fig.Arduino uno board

Technical specifications

- Microcontroller: Microchip ATmega328P[7]
- Operating Voltage: 5 Volts
- Input Voltage: 7 to 20 Volts
- Digital I/O Pins: 14 (of which 6 can provide PWM output)
- PWM Pins: 6 (Pin # 3, 5, 6, 9, 10 and 11)[9]
- UART: 1
- I2C: 1
- SPI: 1
- Analog Input Pins: 6
- DC Current per I/O Pin: 20 mA
- DC Current for 3.3V Pin: 50 mA

- Flash Memory: 32 KB of which 0.5 KB used by bootloader
- SRAM: 2 KB
- EEPROM: 1 KB
- Clock Speed: 16 MHz
- Length: 68.6 mm
- Width: 53.4 mm
- Weight: 25 g
- ICSP Header: Yes
- Power Sources: DC Power Jack & USB Port

General pin functons

LED: There is a built-in LED driven by digital pin 13. When the pin is high value, the LED is on, when the pin is low, it is off.

- **VIN**: The input voltage to the Arduino/Genuino board when it is using an external power source (as opposed to 5 volts from the USB connection or other regulated power source). You can supply voltage through this pin, or, if supplying voltage via the power jack, access it through this pin.
- **5V**: This pin outputs a regulated 5V from the regulator on the board. The board can be supplied with power either from the DC power jack (7 - 20V), the USB connector (5V), or the VIN pin of the board (7-20V). Supplying voltage via the 5V or 3.3V pins bypasses the regulator, and can damage the board.

  3V3: A 3.3 volt supply generated by the on-board regulator. Maximum current draw is 50 mA.

  GND: Ground pins.

- **IOREF**: This pin on the Arduino/Genuino board provides the voltage reference with which the microcontroller operates. A properly configured shield can read the IOREF pin voltage and select the appropriate power source, or enable voltage translators on the outputs to work with the 5V or 3.3V.
-

- **Reset**: Typically used to add a reset button to shields that block the one on the board.[7]

Special pin functions:

Each of the 14 digital pins and 6 analog pins on the Uno can be used as an input or output, under software control (using pinMode(), digitalWrite(), and digitalRead() functions). They operate at 5 volts. Each pin can provide or receive 20 mA as the recommended operating condition and has an internal pull-up resistor (disconnected by default) of 20-50K ohm. A maximum of 40mA must not be exceeded on any I/O pin to avoid permanent damage to the microcontroller. The Uno has 6 analog inputs, labeled A0 through A5; each provides 10 bits of resolution (i.e. 1024 different values). By default, they measure from ground to 5 volts, though it is possible to change the upper end of the range using the AREF pin and the analogReference() function.[7]

In addition, some pins have specialized functions:

- **Serial** / UART: pins 0 (RX) and 1 (TX). Used to receive (RX) and transmit (TX) TTL serial data. These pins are connected to the corresponding pins of the ATmega8U2 USB-to-TTL serial chip.
- **External interrupts**: pins 2 and 3. These pins can be configured to trigger an interrupt on a low value, a rising or falling edge, or a change in value.
- **PWM** (pulse-width modulation): pins 3, 5, 6, 9, 10, and 11. Can provide 8-bit PWM output with the analogWrite() function.
- **SPI** (Serial Peripheral Interface): pins 10 (SS), 11 (MOSI), 12 (MISO), and 13 (SCK). These pins support SPI communication using the SPI library.
- **TWI** (two-wire interface) / I²C: pin SDA (A4) and pin SCL (A5). Support TWI communication using the Wire library.
- **AREF** (analog reference): Reference voltage for the analog inputs.[7]

Arduino Uno Board Description

The Arduino Uno board is the most popular board and mostly referred for the beginners as they are super easy to begin with, it does not requires any specific arduino uno software instead of that all you need is to select the arduino uno in the device option before uploading your program. There are plenty of arduino uno boards look different from the one as shown. But they all have plenty of the same components given below.

Voltage Regulator

The Arduino Uno can be powered by USB cable or directly supplying 9-12v from the barrel jack. The circuitry operates at 5v dc which in case input more than that is regulated with the help of 7805 voltage regulator.
The 7805 voltage regulator ic is used regulate the voltage supplied to the arduino board and manage it through processor and other elements.

Crystal Oscillator

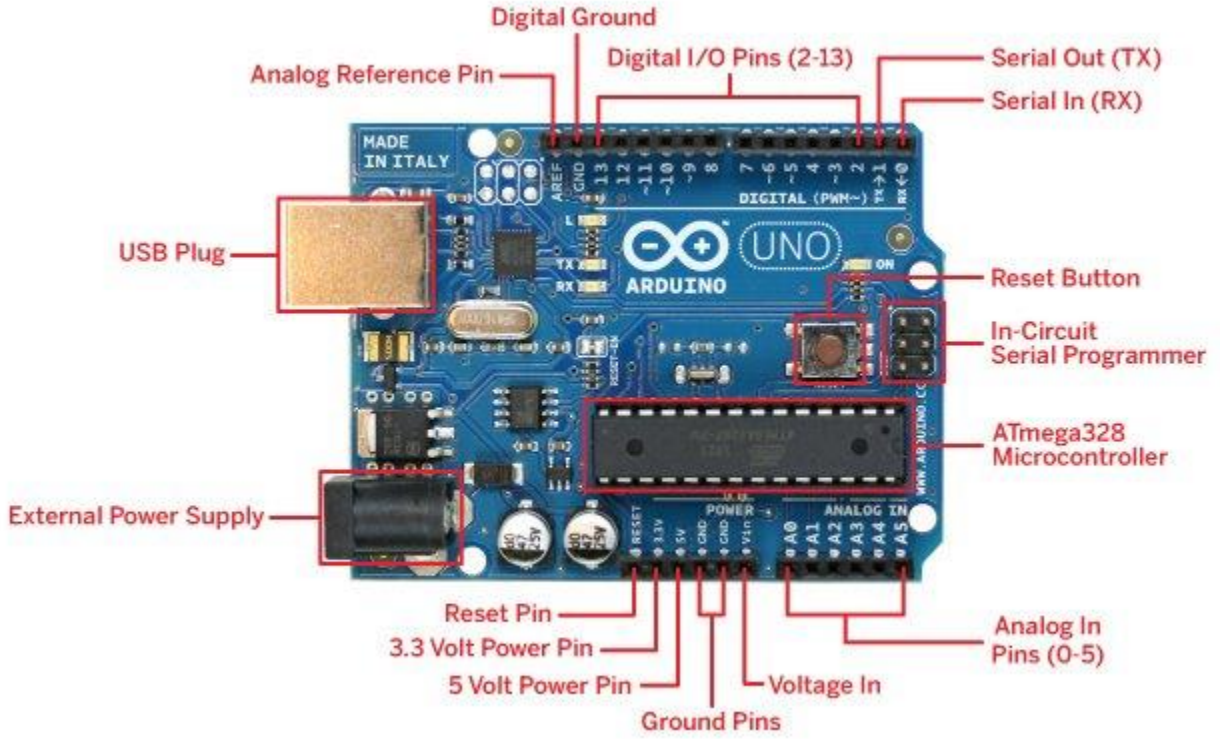
There are certain case when the processor has to deal with time-signal issues, in order to balance it the crystal oscillator is used. The crystal oscillator is the only way the arduino is able to calculate the time. There is a number printed on the top of the crystal. The number indicates the frequency of the crystal, in most of them the frequency is 16 MHZ or 16,000,000 hertz.

Reset Button

There is a reset button given which is used to restart the program running in the Arduino uno. There are two ways to restart the whole program.

- You can use the default reset button.

- You can connect your own reset button at the pin labeled as Reset.



Arduino Uno Board General Voltage Pins

There are following output voltage pins.

- 3v output pin
- 5v output pin
- GND (ground)

Most of the arduino components operate at 5v or 3.3v and so can be powered with these pins. There are several ground ports which can be used to give ground to your circuit and components. There is a Vin pin which can be used to power the arduino uno from an external source.

Note: The voltage must be 5v DC in case the arduino board is powered using external source.

Analog I/O Pins

The Arduino uno board has 6 analog input and output pins from A0 to A5. The pins are best used in case of the analog sensors. The analog pins can read the analog signals from them like temperature, proximity, humidity etc and converts them into digital values that can be read and processed by the microcontroller.

Microcontroller In Arduino Uno Board

Different Arduino boards have different microcontrollers. It can be said that is the main component in the overall Arduino board. The main IC is a bit different in different arduino uno boards. The microcontrollers used basically are of ATMEL Company and it is necessary for you to know what IC you are using in order to load your program in it. You can easily read the information on the top of the IC and select the corresponding from the option given in the arduino software. For more information about the ic you can refer to the corresponding datasheet.

SPI Ports

The SPI (Serial Peripheral Interface) is considered for an expansion of the output. In most of the cases the ICSP Pin as an small programming header in Arduino Uno consist of RESET, SCK, MOSI, MISO, VCC and GND.

Power Indicator LED

When you power up the Arduino uno board, there must be an LED light up which will indicate the board is powered up correctly. In case you don't see the glowing light, there must be something wrong with the connection you've made.

TX And RX Pins

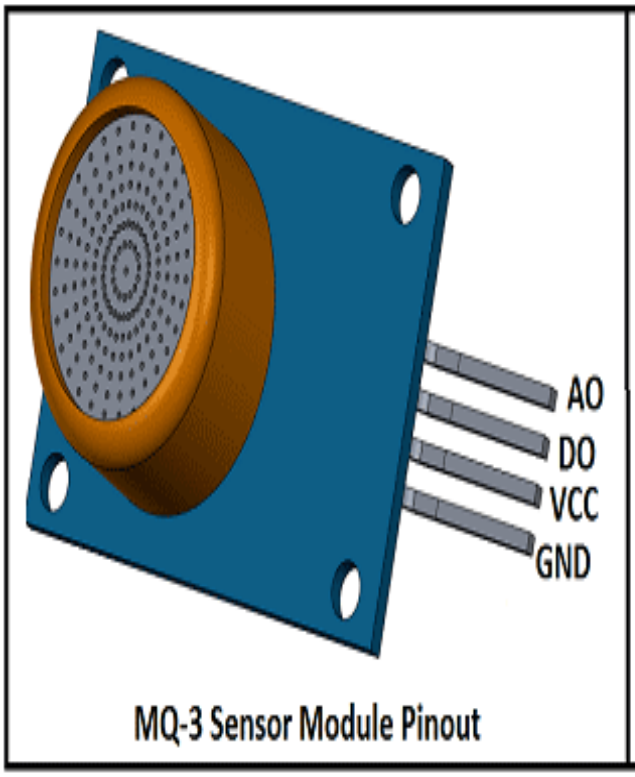
In the Arduino Uno board there are two LED's labeled as TX (transmitter) and RX (Receiver), Same are labeled on the pin 0 and 1 respectively. These pins are used for serial communication and the corresponding LED glowing indicated fi the data is being sent by TX and if the data is being received by RX. The TX LED flashes at the different frequency which depends on the baud rate being used by the arduino board to transmit.

Digital I/O Pins

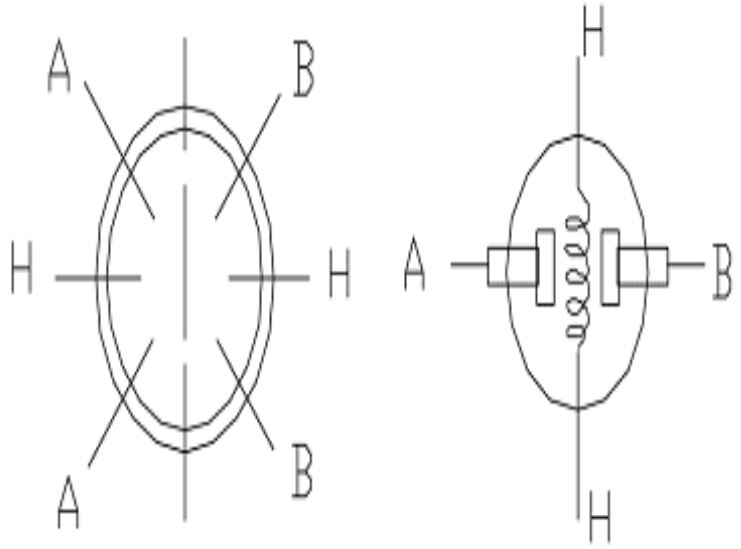
Arduino uno board does have 14 digital i/o pins (input/output pins) out of which contains 6 PWM output (Pulse width modulation). The digital pins can be configured to read logic values such as 0 and 1 or can give logic (0 and 1) output for different modules such as LEDs, Relays, etc. there is a symbol "~" corresponding to the PWM pins.

Additionally there is AREF which is used to set an external reference voltage as the upper limit to the analog input pins. The external reference voltage is usually in between 0 to 5 volts.

MQ-3 Alcohol Gas Sensor



MQ-3 Sensor Module Pinout



MQ-3 Sensor Pinout

Fig.MQ-3 ALCOHOL SENSOR

Pin Description

For MQ-3 Sensor Module

Pin Name	Description
VCC	This pin powers the module, typically the operating voltage is +5V
GND	Used to connect the module to system ground
Digital Out (DO)	You can also use this sensor to get digital output from this pin, by setting a threshold value using the potentiometer

Analog Out (AO)	This pin outputs 0-5V analog voltage based on the intensity of the gas

For MQ-3 Sensor

1	H - Pins	Out of the two H pins, one pin is connected to supply and the other to ground
2	A- Pins	The A pins and B pins are interchangeable. These pins will be tied to Supply voltage.
3	B- Pins	A pins and B pins are interchangeable. One pin will act as output while the other will be pulled to ground.

Features of MQ-3 Alcohol Sensor

- Sensor Type - Semiconductor
- Easy SIP header interface
- Compatible with most of the microcontrollers
- Low- Drive circuit power standby mode
- Requires heater voltage
- Good sensitivity to alcohol gas
- Fast response and High sensitivity
- Long life and low cost
- Requires simple

Specifications of MQ-3 Gas Sensor

- Power requirements: 5 VDC @ ~165 mA (heater on) / ~60 mA (heater off)
- Current Consumption: 150mA

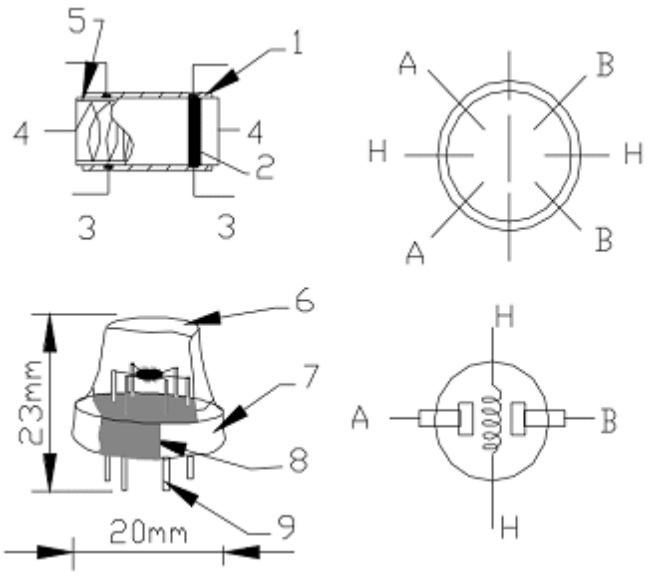
- DO output: TTL digital 0 and 1 (0.1 and 5V)
- AO output: 0.1- 0.3 V (relative to pollution), the maximum concentration of a voltage of about 4V
- Detecting Concentration: 0.05-10mg/L Alcohol
- Interface: 1 TTL compatible input (HSW), 1 TTL compatible output (ALR)
- Heater consumption: less than 750mW
- Operating temperature: 14 to 122 °F (-10 to 50°C)
- Load resistance: 200kΩ
- Sensitivity S: Rs(in air)/Rs(0.4mg/L Alcohol)≥5
- Sensing Resistance Rs: 2KΩ-20KΩ(in 0.4mg/l alcohol)
- Dimensions: 32 x 22 x 16 mm

Brief Detail about MQ-3 Gas Sensor

MQ-3 module is suitable for detecting Alcohol, Benzine, CH_4, Hexane, LPG, CO. Sensitive material of MQ-3 gas sensor is SnO_2, which with lower conductivity in clean air. When the target alcohol gas exist, the sensor's conductivity is more higher along with the gas concentration rising. MQ-3 gas sensor has high sensitity to Alcohol, and has good resistance to disturb of gasoline, smoke and vapor.

This sensor provides an analog resistive output based on alcohol concentration. When the alcohol gas exist, the sensor's conductivity gets higher along with the gas concentration rising.

There is a resistance across an A and B inside the sensor which varies on detection of alcohol. More the alcohol, the lower the resistance. The alcohol is measured by measuring this resistance. The sensor and load resistor form a voltage divider, and the lower the sensor resistance, the higher the voltage reading will be.



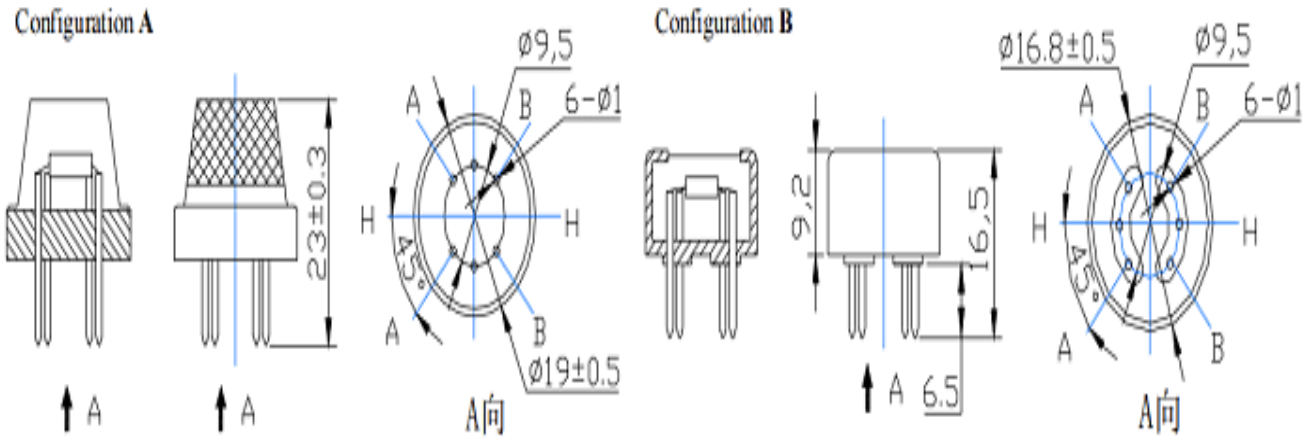
	Parts	Materials
1	Gas sensing layer	SnO_2
2	Electrode	Au
3	Electrode line	Pt
4	Heater coil	Ni-Cr alloy
5	Tubular ceramic	Al_2O_3
6	Anti-explosion network	Stainless steel gauze (SUS316 100-mesh)
7	Clamp ring	Copper plating Ni
8	Resin base	Bakelite
9	Tube Pin	Copper plating Ni

Structure and configuration of MQ-3 gas sensor is shown in the figure above for Configuration A or B, sensor composed by micro AL_2O_3 ceramic tube, Tin Dioxide (SnO_2) sensitive layer, measuring electrode and heater are fixed into a crust made by plastic and stainless steel net. The heater provides necessary work conditions for work of sensitive components. The enveloped MQ-3 have 6 pin, 4 of them are used to fetch signals, and other 2 are used for providing heating current.

Applications of MQ-3 Gas Sensor

- Gas level over-limit alarm
- Breathalyser
- Portable alcohol detector
- Stand-alone/background sensing device
- Environmental monitoring equipment

2D Model of MQ-3 Sensor (Configuration A and B)



16×2 LCD Display

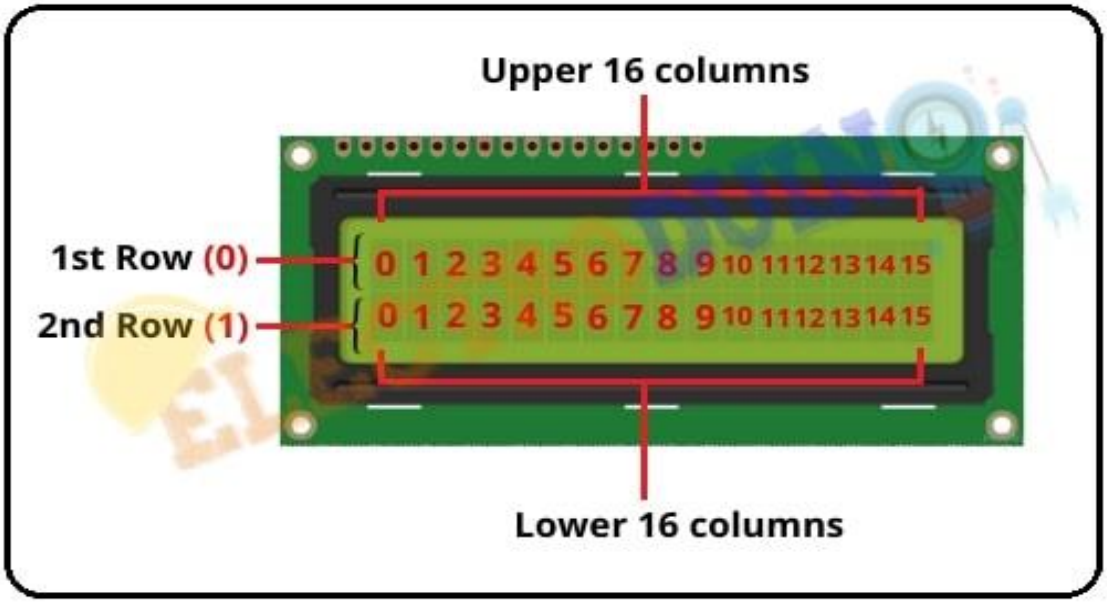
Introduction

16×2 LCD is one kind of electronic device used to display the message and data. The term LCD full form is **Liquid Crystal Display**. The display is named 16×2 LCD because it has 16 Columns and 2 Rows. it can be displayed (16×2=32) 32 characters in total and each character will be made of 5×8 Pixel Dots. These displays are mainly based on multi-segment light-emitting diodes. There are a lot of combinations of display available in the market like 8×1, 8×2, 10×2, 16×1, etc. but the 16×2 LCD is widely used. These LCD modules are low cost, and programmer-friendly, therefore, is used in various DIY circuits, devices, and embedded projects.

16×2 LCD Display Module Pin Diagram /Pinout

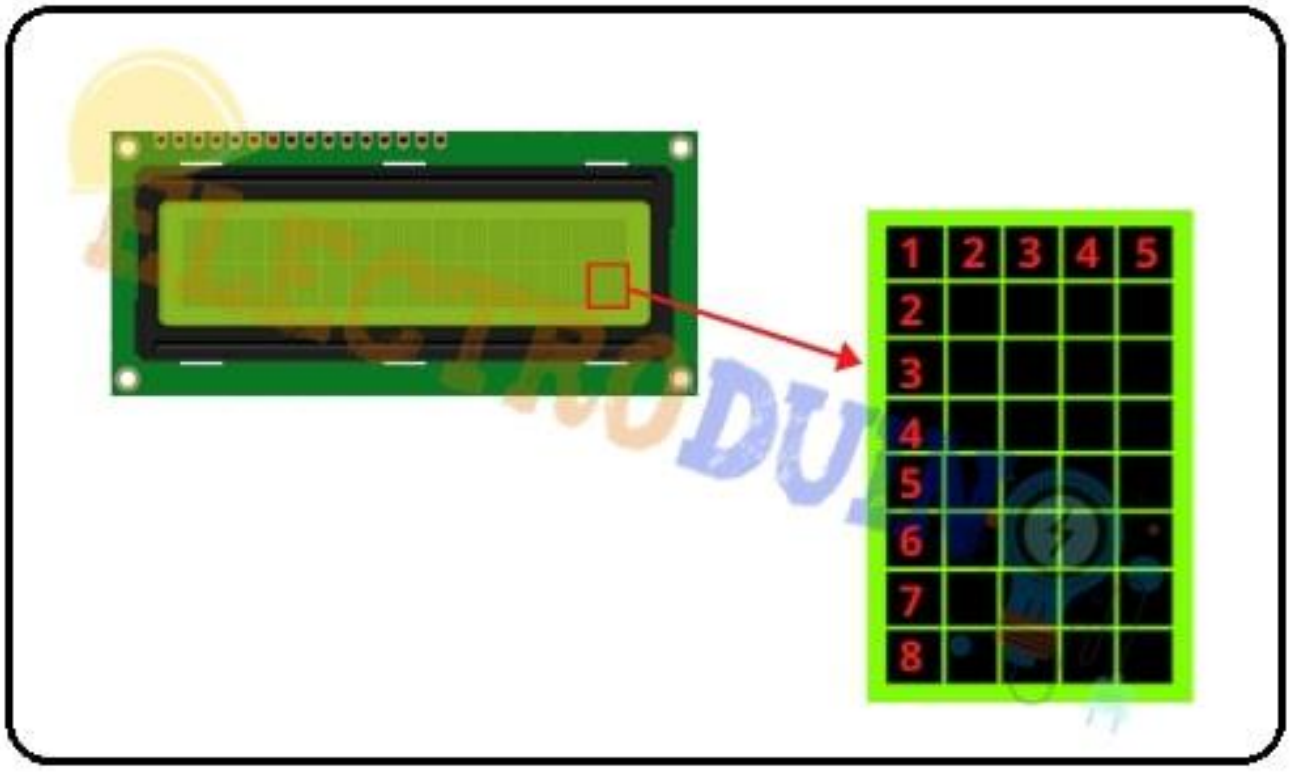
Pin Number	Pin Name	Description
1	Vss (Ground)	VSS pin connected to microcontroller ground
2	Vdd (+5 Volt)	VDD pin connected to microcontroller + 5V power supply
3	VE (Contrast V)	Adjusts the contrast of the LCD display. It is Connected to a variable POT that can provide 0-5V power supply. Connect it to the ground to get maximum contrast.
4	RS (Register Select)	Toggles between Command/Data Register. Connect a microcontroller data pin and obtains either 0 or 1(0 = data mode, and 1 = command mode).
5	RW (Read/Write)	Used to read or write data. Normally grounded to write data to LCD
6	E (Enable)	This pin should be held high to execute the Read/Write process, and it is connected to the microcontroller data pin & constantly held high.
7	D0 (Data Pin 0)	These 8 Pins are used to sending commands or data to the LCD. These pins are connected in two-wire modes like 4-wire mode and 8-wire mode. In 4-wire mode, only four pins are connected to the microcontroller data pin 0 to 3. And in 8-wire mode, 8-pins are connected to microcontroller data pin 0 to 7.
8	D1 (Data Pin 1)	
9	D2 (Data Pin 2)	
10	D3 (Data Pin 3)	
11	D4 (Data Pin 4)	
12	D5 (Data Pin 5)	
13	D6 (Data Pin 6)	
14	D7 (Data Pin 7)	
15	LED + (+5V)	This is the positive terminal of the backlight LED of the display. It's connected to +5V to turn on the backlight LED.
16	LED – (Ground)	This is the negative terminal of the backlight LED of the display. It's connected to the ground to turn on the backlight LED.

16×2 LCD Display Module Hardware Overview



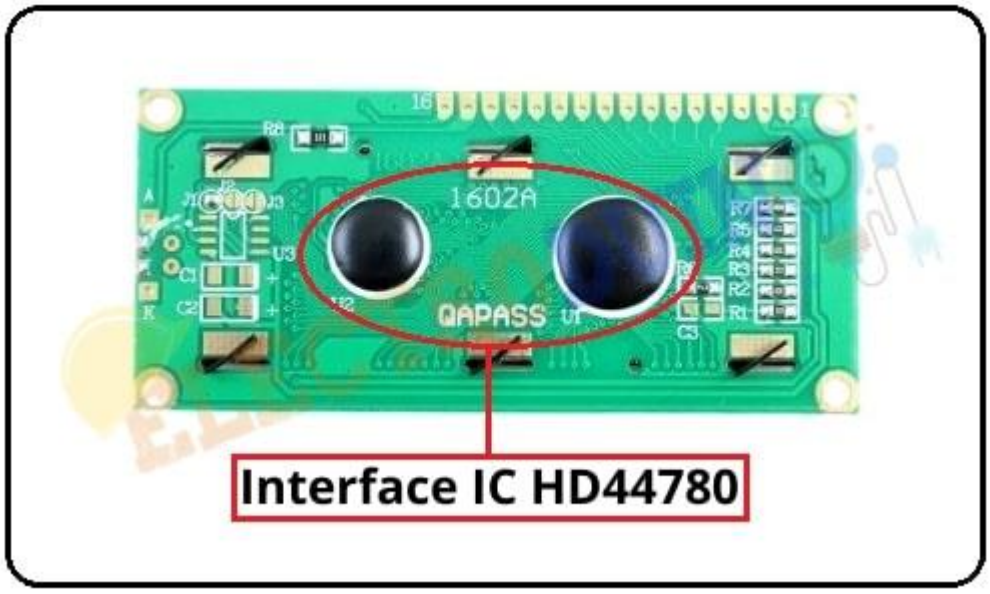
16×2 LCD Display Module row & column

These 16 x 2 LCD display modules are constant of 16 Columns and 2 Rows. The 1st row of this module has a total of 16 columns 0 to 15 and the position of the first row is 0. Also, the 2nd row has a total of 16 columns 0 to 15 and the position of the second row is position is 1. So the total numbers of the column are 16 x 2 = 32. Its means 16 x 2 LCD module can display 32 characters at the same time.



***16×2* LCD Display 5×8 Pixel**

Each column will be made of 5×8 Pixel Dots. So every character will be made of 5×8 = 40 Pixel Dots. It means total display has (32×40) 1280 Pixels.



16×2 LCD Display Module

Interface IC HD44780

It will be a very complicated task to handle everything with the help of a microcontroller. So an Interface IC like HD44780 is used, which is mounted on the backside of the LCD Module. The function of this IC is to get the Commands and Data from the microcontroller and process them to display meaningful information onto the LCD Screen.

Specifications

Parameter	Value
Operating Voltage	4.7V-5.3V
Operating Current	1mA with no backlight
Controller	HD47780
Number of columns	16 each row, total 16 x2 = 32 columns
Number of rows	2
Every character pixel box	5×8 pixel
Number of Character	32

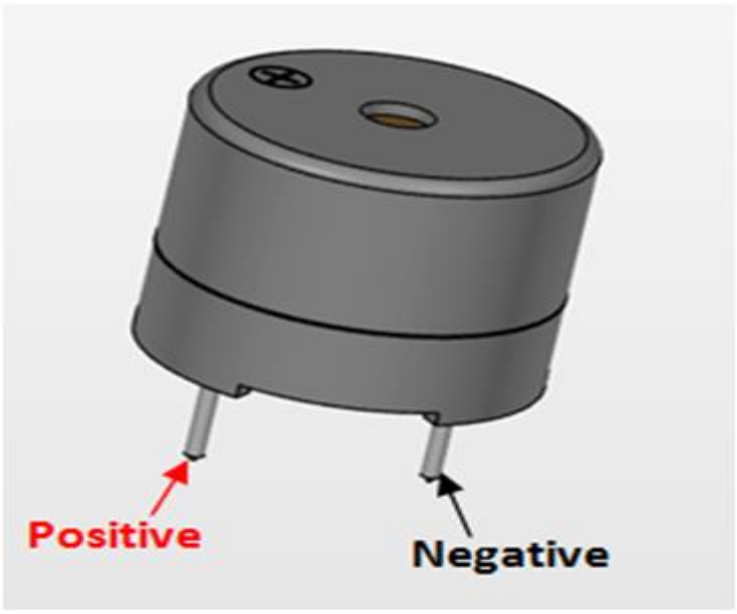
Character font-size	0.125″W x 0.200″H
Work Modes	4-bit & 8-bit
Backlight LED color	Blue or Green
Number of Pins	16
Module PCB Size	80 x 36 x 10 (LxWxH) mm.
Display Bezel	72 x 25mm (2.8 x 1″)

Application

- it is used in many electronic projects and devices to display messages.

BUZZER

Active Passive Buzzer



Active Passive Buzzer
Active Passive Buzzer Pinout

Buzzer Pin Configuration

Pin Number	Pin Name	Description

1	Positive	Identified by (+) symbol or longer terminal lead. Can be powered by 6V DC
2	Negative	Identified by short terminal lead. Typically connected to the ground of the circuit

Buzzer Features and Specifications

- Rated Voltage: 6V DC
- Operating Voltage: 4-8V DC
- Rated current: <30mA
- Sound Type: Continuous Beep
- Resonant Frequency: ~2300 Hz
- Small and neat sealed package
- Breadboard and Perf board friendly

Equivalents for Passive Buzzer

Piezo Electric buzzer, Speaker, Active Passive Buzzer with Module

How to use a Buzzer

A **buzzer** is a small yet efficient component to add sound features to our project/system. It is very small and compact 2-pin structure hence can be easily used on breadboard, Perf Board and even on PCBs which makes this a widely used component in most electronic applications.

There are two types of buzzers that are commonly available. The one shown here is a simple buzzer which when powered will make a Continuous Beeeeeeppp.... sound, the other type is called a readymade buzzer which will look bulkier than this and will produce a Beep. Beep. Beep. Sound due to the internal oscillating

circuit present inside it. But, the one shown here is most widely used because it can be customised with help of other circuits to fit easily in our application.

This buzzer can be used by simply powering it using a DC power supply ranging from 4V to 9V. A simple 9V battery can also be used, but it is recommended to use a regulated +5V or +6V DC supply. The buzzer is normally associated with a switching circuit to turn ON or turn OFF the buzzer at required time and require interval.

Applications of Buzzer

- Alarming Circuits, where the user has to be alarmed about something
- Communication equipments
- Automobile electronics
- Portable equipments, due to its compact size

LED :

LED is a two led semiconductor light source it is a p n junction diode which emits light when activated. When a suitable voltage is applied to the leads electrons are able to recombine with electrons holes within the device, releasing energy in the form photons

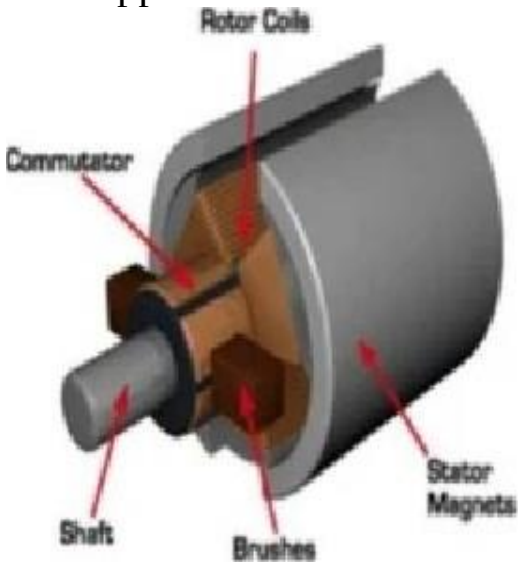
FIG. LED

An LED lamp or I ED light bulb is an electric light for use in light fixtures that produces light usmg one or more light-emitting diodes (LEDs). LED lamps have a lifespan many times longer than equivalent Incandescent lamps.

DC MOTOR:

DC motor.- is any of class of rotary electrical machine that converts direct current electrical energy in to mechanical energy. The most common types rely on the force produced by magnetic field. Nearly all type of DC motors have some internal mechanism, either electromechanical or electronic, to periodicallychange the direction of current flow in part of the motor. Working principle of brushed electric motor with two-pole rotor (annature) and permanent magnet stator "N and "S" designated polarities on the inside axis face of the magnet; the outside face have opposite polarity. The + sign and — sign show where the DC cunent is applied to the commutator

which supplied current to the armature coil.



DC Motor Components: -

Stator:lt consists of either a permanent magnet or electromagnetic windings, and generates a stationary magnetic field around the rotor which occupies the central

part of the motor.

Rotor (Armature):-

The rotor is made up of one or more electric windings around armature arms. These electric windings generate a magnetic field when energized by the extemal current. The magnetic poles thus generated by this rotor field are attracted to the opposite poles generated by the stator field and repelled by the similar poles, which causes the rotor to rotate.

Commutator:

The DC motor doesn't use an external current switching device, instead it uses a mechanical connector called the commutator which is a segmented sleeve usually made of copper, mounted on the rotating shaft. The current +/- is supplied to this commutator segments with the help of blushes**.**

Brushes:-

As the motor turns the brushes slide over the commutator segments hence creating the variable magnetic field in different arms through the commutator segments attached to the windings. Hence a dynammc magnetic field is generated in the motor when a voltage is applied across the brushes.

Shaft: -

It is a manufacture all types of DC Electric Motor Shafts including Input & Output Shafts for Aluminum Worm Reduction Gear Boxes in different materials.

9V Battery:

The battery is used in an electronic circuit to push the current through the electronic component.

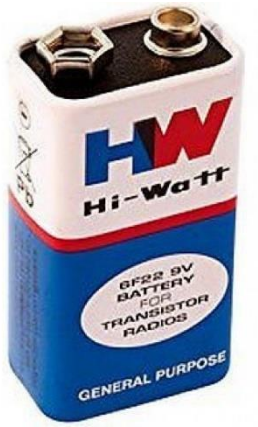


FIG :9V BATTERY

I2C MODULE-

I2C Serial Interface Adapter Module for LCD

The I2C serial adapter can be connected to 16x2 or 20x4 LCD displays via breakout pins. Once it fits perfectly onto the LCD, we can connect the module to any MCU/MPU using I2C protocol pins

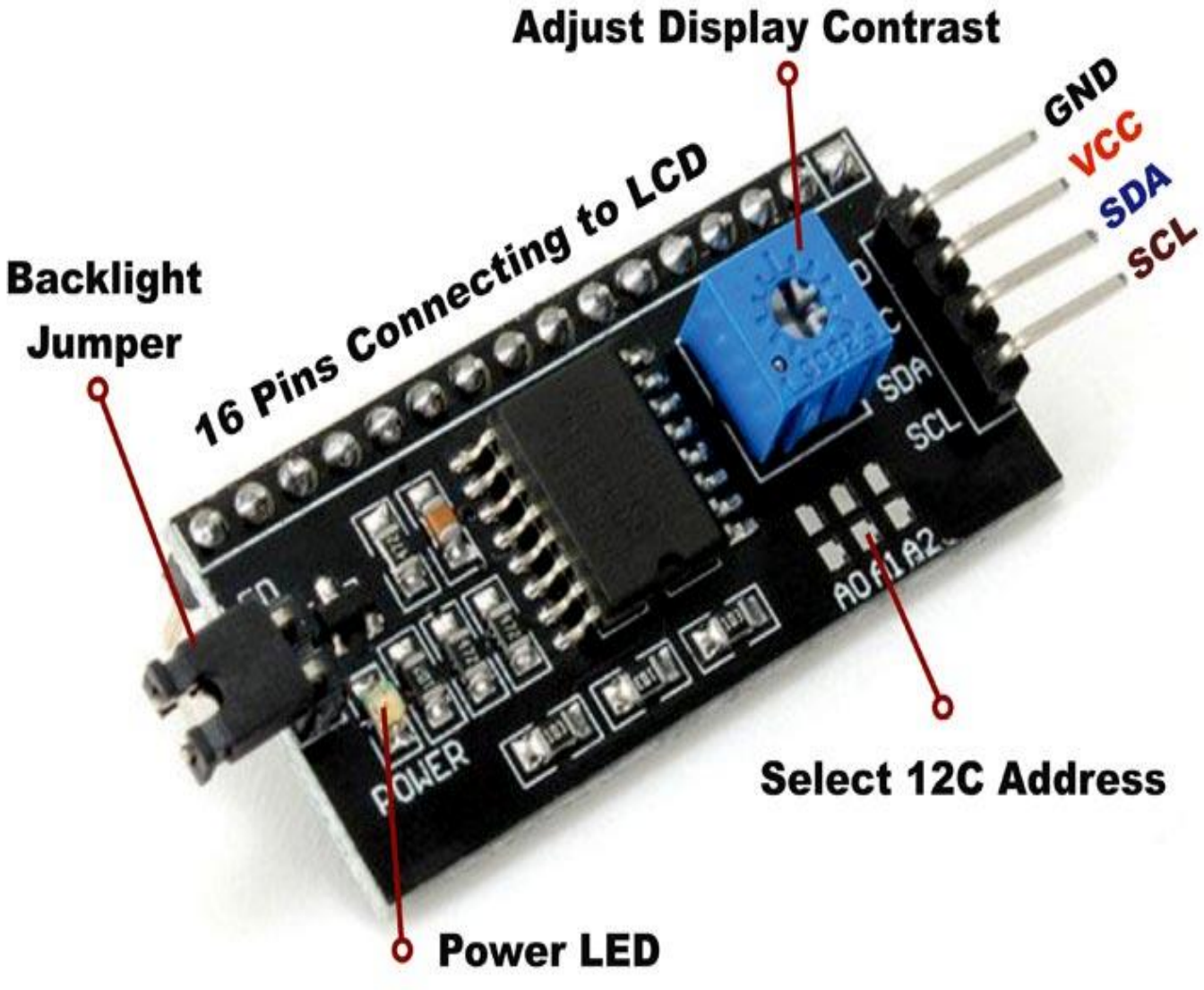
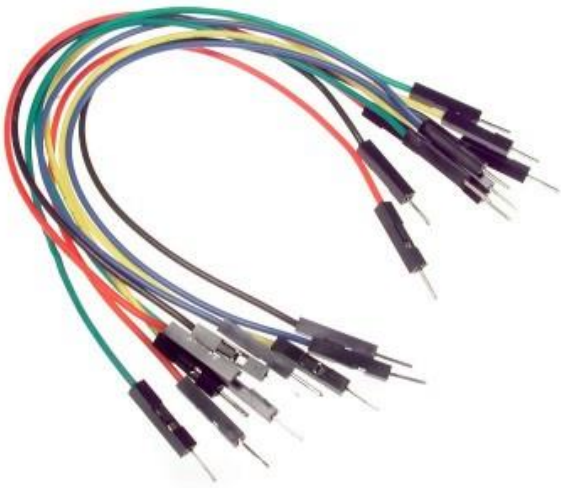


FIG. I2C Module

Jumper Wires



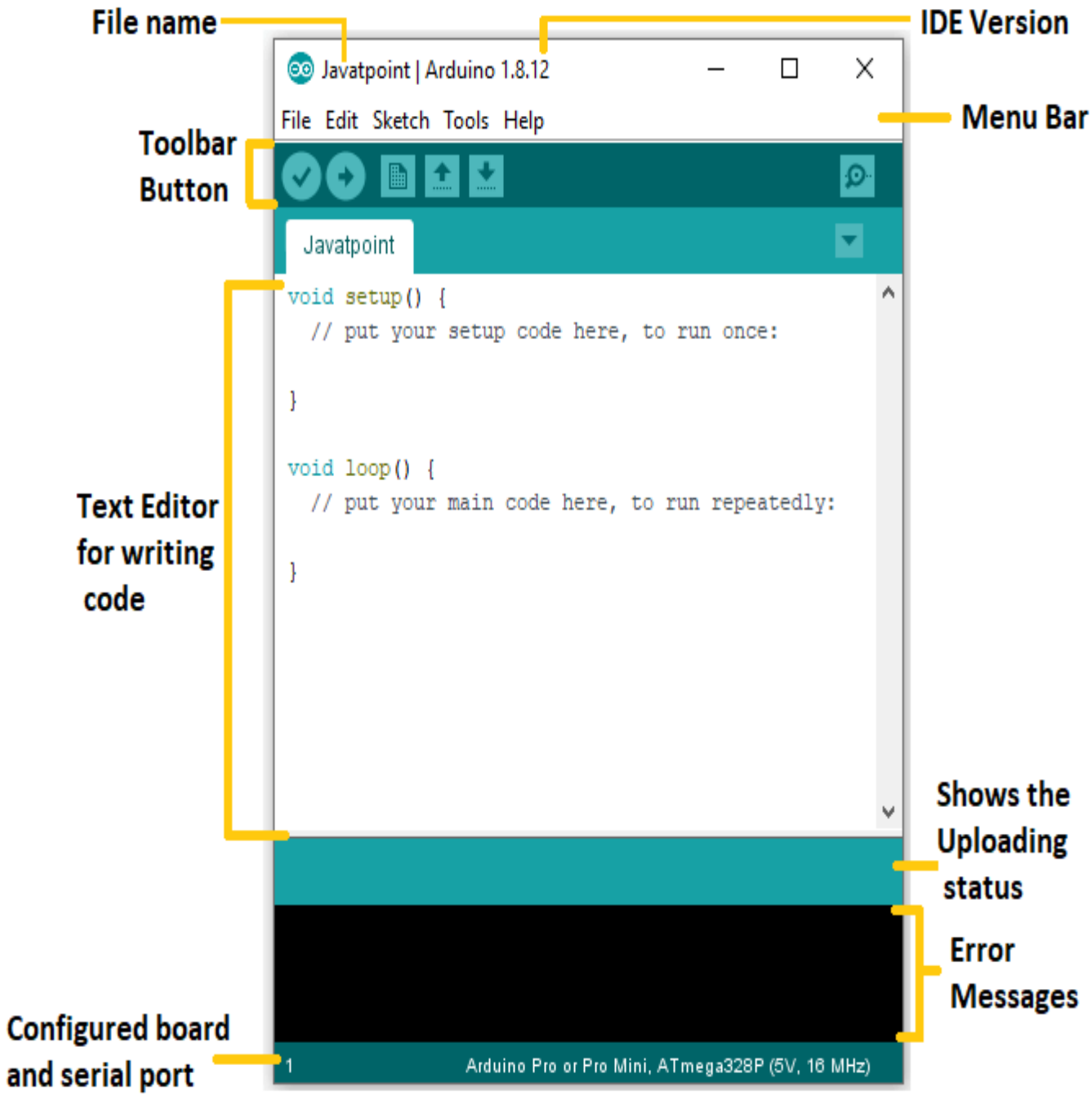
Jumper wires are used for making connections between items on your breadboard and your Arduino's header pins. Use them to wire up all your circuits!

Arduino IDE

The Arduino IDE is an open-source software, which is used to write and upload code to the Arduino boards. The IDE application is suitable for different operating systems such as **Windows, Mac OS X, and Linux**. It supports the programming languages C and C++. Here, IDE stands for **Integrated Development Environment**.

The program or code written in the Arduino IDE is often called as sketching. We need to connect the Genuino and Arduino board with the IDE to upload the sketch written in the Arduino IDE software. The sketch is saved with the extension '**.ino**.'

The Arduino IDE will appear as:


File name
IDE Version
Javatpoint | Arduino 1.8.12
File Edit Sketch Tools Help
Menu Bar
Toolbar
Button
Javatpoint
void setup() {
// put your setup code here, to run once:
}
void loop() {
// put your main code here, to run repeatedly:
}
Text Editor
for writing
code
Shows the
Uploading
status
Error
Messages
Configured board
and serial port
1
Arduino Pro or Pro Mini, ATmega328P (5V, 16 MHz)

CHAPTER 5

IMPLEMENTATION

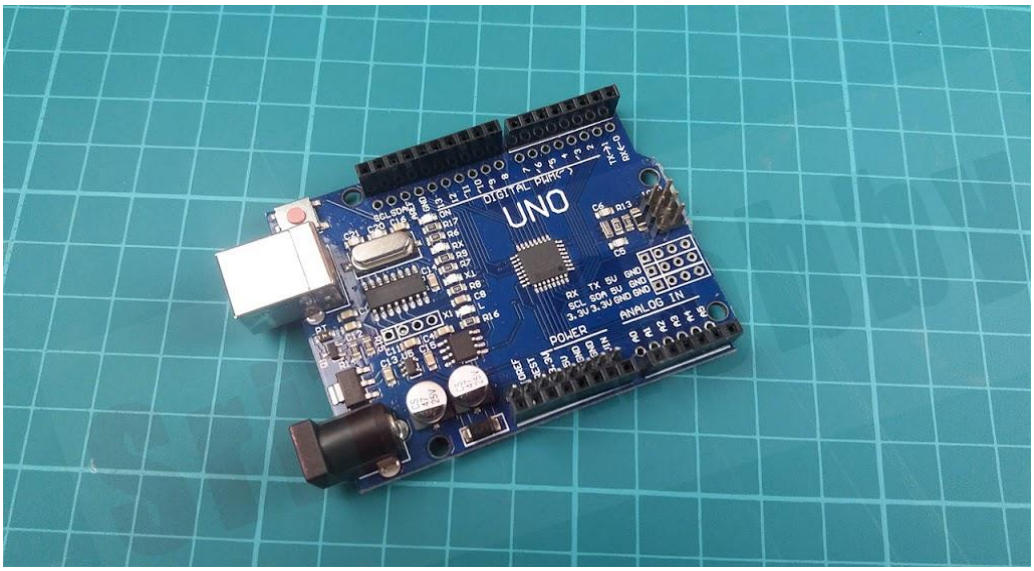
CHAPTER 5

IMPLEMENTATION

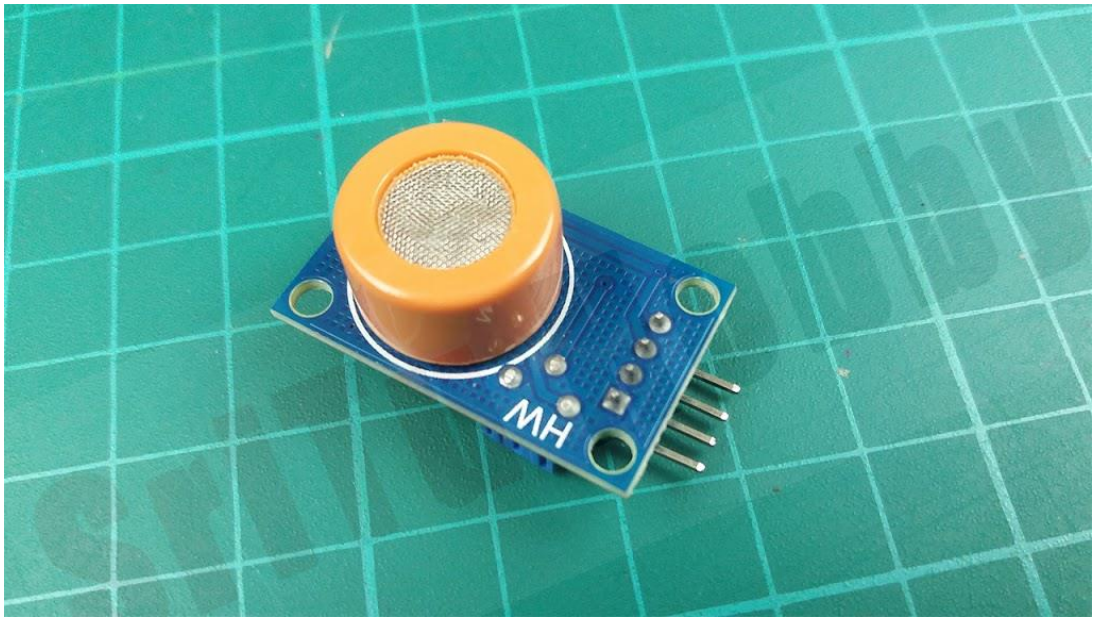
Step 1

Firstly, identify these components.

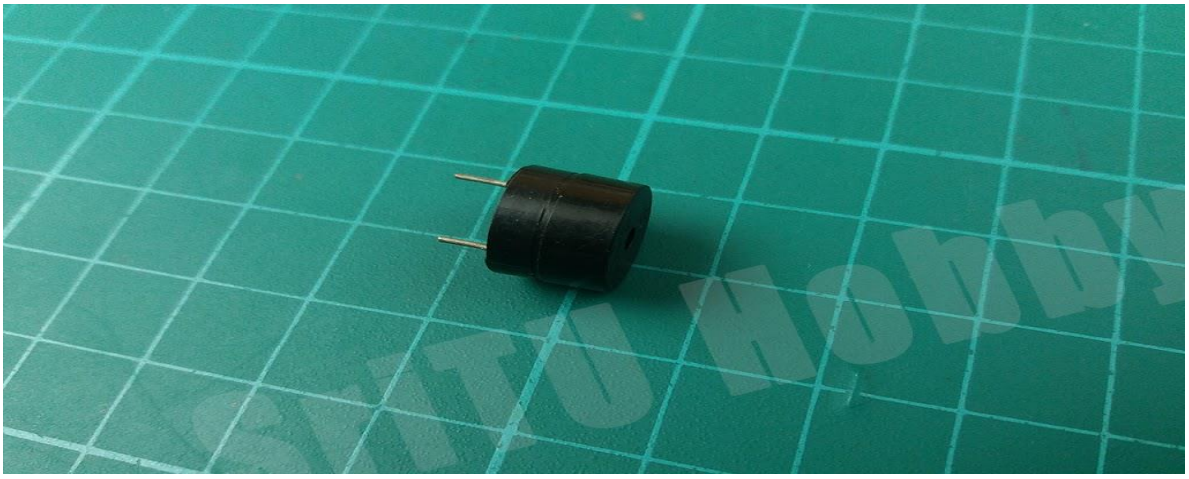
Arduino UNO board.



MQ3 sensor.



5V buzzer.



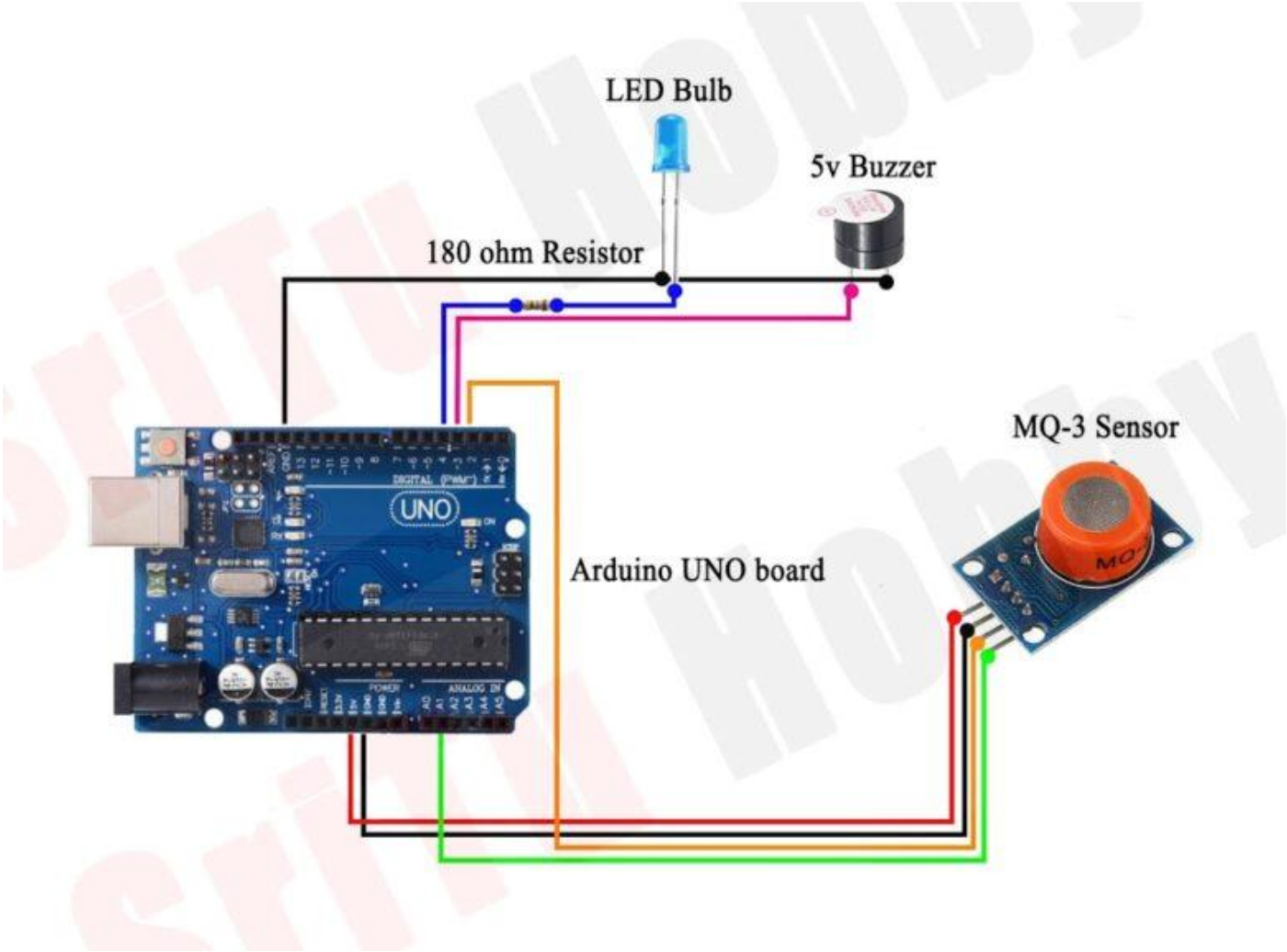
LED bulb

JUMPER WIRES

DC motor

Step 2

Secondly, connect these components. For that, use the circuit diagram below.



Step 3

Thirdly, let's create a program for this project. It is as follows.

The complete program of this project – Download

```
/*MQ-3 sensor with Arduino.
  created by the SriTu Tech team.
  Read the code below and use it for any of your creations.
  http://srituhobby.com
*/
#define sensorDigital 2
#define LED 3
#define buzzer 4
#define sensorAnalog A1

void setup() {
  pinMode(sensorDigital, INPUT);
  pinMode(LED, OUTPUT);
  pinMode(buzzer, OUTPUT);
  Serial.begin(9600);
}
void loop() {
  bool digital = digitalRead(sensorDigital);
  int analog = analogRead(sensorAnalog);

  Serial.print("Analog value : ");
  Serial.print(analog);
  Serial.print("t");
  Serial.print("Digital value :");
  Serial.println(digital);

  if (digital == 0) {
    digitalWrite(LED, HIGH);
    digitalWrite(buzzer, HIGH);
  } else {
    digitalWrite(LED, LOW);
    digitalWrite(buzzer, LOW);
  }
}
```

Code explanation

First, sensor-connected PIN, LED connected PIN, and buzzer connected PIN is defined.

```
#define sensorDigital 2
#define LED 3
#define buzzer 4
#define sensorAnalog A1
```

Second, these PINs are converted to OUTPUT and INPUT PIN. Also, the serial monitor is enabled in the void setup.

```
void setup() {
  pinMode(sensorDigital, INPUT);
  pinMode(LED, OUTPUT);
  pinMode(buzzer, OUTPUT);
  Serial.begin(9600);
}
```

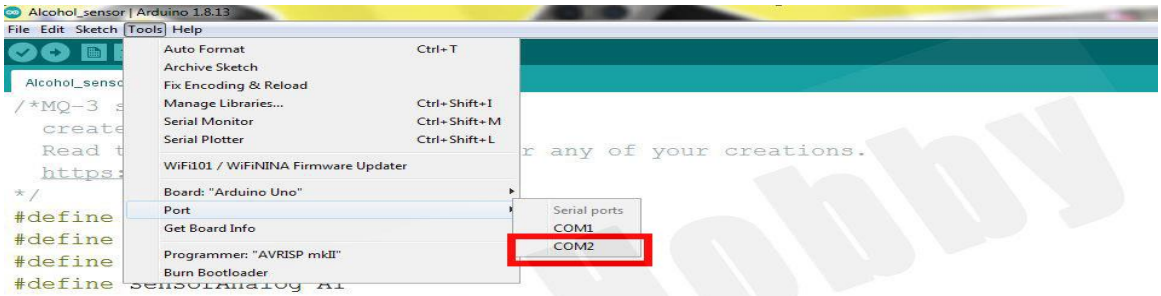
In the void loop, the digital and analog values received through the sensor are inserted into two separate variables and printed on a serial monitor. Also, if the digital value is 0, the LED and the buzzer turn ON, and if the digital value is 1, the LED and the buzzer turns off.

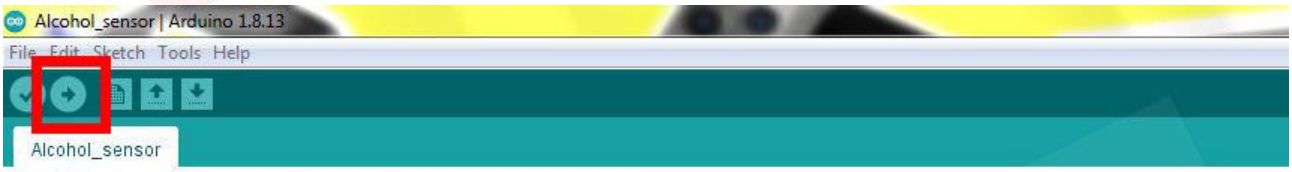
```
void loop() {
  bool digital = digitalRead(sensorDigital);
  int analog = analogRead(sensorAnalog);
  Serial.print("Analog value : ");
  Serial.print(analog);
  Serial.print("t");
  Serial.print("Digital value :");
  Serial.println(digital);

  if (digital == 0) {
    digitalWrite(LED, HIGH);
    digitalWrite(buzzer, HIGH);
  } else {
    digitalWrite(LED, LOW);
```

```
    digitalWrite(buzzer, LOW);
  }
}
```

Step 4

Lastly, select the correct board and port. Afterward, upload this program to the Arduino board.






```
/*MQ-3 sensor with arduino.
  created by SriTu Tech team.
  Read the code below and use it for any of your creations.
  https://www.srituhobby.com/
*/
#define sensorDigital 2
#define LED 3
#define buzzer 4
#define sensorAnalog A1

void setup() {
  pinMode(sensorDigital, INPUT);
  pinMode(LED, OUTPUT);
  pinMode(buzzer, OUTPUT);
  Serial.begin(9600);
}
void loop() {
  bool digital = digitalRead(sensorDigital);
  int analog = analogRead(sensorAnalog);

  Serial.print("Analog value : ");
  Serial.print(analog);
```

CHAPTER 6
RESULT ANALYSIS

CHAPTER 6

RESULT ANALYSIS

CHAPTER 7
CONCLUSION

CHAPTER 7

CONCLUSION

CONCLUSION :

We have provided a very effective solution to develop an intelligent system for vehicles for alcohol detection whose core is Arduino. Since sensor has fine sensitivity range around 2 meters, t can suit to any vehicle and can easily be hidden from the suspects. The whole system has also 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.

Title of the Project : **ALCOHOL SENSING AUTO ENGINE LOCK USING ARDUINO**

Name of the students : **N.PURUSHOTHAM (19751A04B9)**

K. YUGANDHAR (19751A0468)

K. AMARANADHA REDDY (19751A0474)

M. V. PAVAN KUMAR REDDY (19751A0498)

Name of the Guide & Design

Table 1: Outcome attained and its justification

PO	Justification
PO1	The knowledge on concept of Arduino was gained through this project work.
PO2	This problem analysis based on improving the social distancing.
PO3	The approach is done via tinker cadand designed using arduino.
PO4	The software Arduino had been used for implementing this project.
PO5	This project had been used for facilitating social distancing by alerting users when they got close to each other.
PO6	The engineer and society: Apply reasoning informed by the contextual knowledge to assess Societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	Environment and sustainability: Understand the impact of theprofessional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO9	Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10	Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	Life-Long learning Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest content of technological change.

ALCOHOL SENSING AUTOMATION ENGINE LOCKING SYSTEM USING ARDUINO

COURSE OUTCOMES FOR PROJECT WORK

On successful completion of project work,

CO1. Gained knowledge on

a.Arduino b.Arduino software

CO2. Identified the analyze the problem, most of the road accidents are occurring due to drunk-driving

CO3. Examined arduino software and install.

CO4. Investigated behavior of different sensors and identified used MQ-3 sensor.

CO5. Used Arduino which are used for different applications.

CO6. This Project is designed in aim to help the society by developing a system that could facilitate social distancing.

CO7. Materials or substances which create environment issue are not used in this work.

CO8. The idea is a novel one and methodology used also follows all the mentioned standards to maintain the ethical principles.

CO9. The total work divided equally among all our team members and each one contributes for the successful completion of this work.

CO10. Presentation on the project work was made and prepared project report and which is available for public to understand and further development.

CO11. Project work completed in three phases

a) In first phase completed the literature survey formed problemstatement and prepared solutions. Cost invested in this phase isnil.

b) Identified and designed proposed system for the said problem. The total Cost invested in testing purpose and identification of best methodology is nil.

c)Implemented and verified the results for expected outcome for social distancing detector and verified the results.

CO12. The knowledge and skills gained in this project helps to continue our future works and engage in lifelong learning process

REFERENCES

.

[1] Cahalan,D., I. Cisin, and Crossley, American Drinking Practices: A National Study of Driving Behaviour and Attitudes. 1969, Rutgers University Press: New Brunswick, NJ.

[2] MUGILA.G, MUTHULAKSHMI.M, SANTHIYA.K, Prof.DHIVYA.P- SMART HELMET SYSTEM USING ALCOHOL DETECTION FOR VEHICLE PROTECTION[International Journal of Innovative Research in Science Engineering and Technology (IJIRTSE) ISSN: 2395-5619, Volume – 2, Issue – 7. July 2016].

[3] Dhivya M and Kathiravan S, Dept. of ECE, Kalaignar Karunanidhi Institute of Technology- Driver Authentication and Accident Avoidance System for Vehicles[Smart Computing Review, vol. 5, no. 1, February 2015].

[4] Lee, Assessing the Feasibility of Vehicle-Based Sensors To Detect Alcohol Impairment. 2010, National Highway Traffic Safety Administration: Washington, DC

[5] http://www.arduino.cc/

[6] A. ISuge, H.Takigawa, H.Osuga, H.Soma, K.Morisaki, Accident Vehicle Automatic Detection System By Image Processing Technology , ©IEEE 1994 Vehiclee Navigation & ISC.

[7] Paul Baskett , Yi Shang , Michael V. Patterson , Timothy Trull , Towards A System for Body-Area Sensing and Detection of Alcohol Craving and Mood Dvsregulation , © 2013 IEEE

[8] Bhuta, Desai,Keni “Alcohol Detection and Vehicle Controlling” International Journal of Engineering Trends and Applications (IJETA) – Volume 2 Issue 2, Mar-Apr 2015.

[9]. “Alcohol Detection and Accident Prevention of Vehicle ” ,IJIERE, Volume 2,Issue 3,2015