

VEHICLE ACCIDENT PREVENTION SYSTEM USING EMBEDDED WITH ALCOHOL DETECTOR AND SIM900

Submitted in partial fulfilment of the requirements for the award of
Bachelor of Engineering degree in

ELECTRONICS AND COMMUNICATION ENGINEERING

By

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**DEPARTMENT OF ELECTRONICS AND COMMUNICATION
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**SCHOOL OF ELECTRICAL AND ELECTRONICS
SATHYABAMA INSTITUTE OF SCIENCE AND TECHNOLOGY
(DEEMED TO BE UNIVERSITY)**

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BONAFIDE CERTIFICATE

This is to certify that this Project Report is the bonafide work of **CH.NithinKumar (Reg No: 38130039)** and **R. Venkata Ramana (Reg. No: 38130181)** who carried out the project entitled **"VEHICLE ACCIDENT PREVENTION SYSTEM USING EMBEDDED WITH ALCOHOL DETECTOR AND SIM900"** under my supervision from December 2022 to May 2022.

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DECLARATION

We **CH.Nithin Kumar (38130039)** and **Ramanaboyina Venkata Ramana (38130196)** hereby declare that the Project Report entitled **VEHICLE ACCIDENT PREVENTION SYSTEM USING EMBEDDED WITH ALCOHOL DETECTOR AND SIM900** done by me under the guidance of **Dr.S.Poonguzhali M.E.,PH.D**, is submitted in partialfulfilment of the requirements for the award of Bachelors of Engineering degree in Electronics and communications.

DATE: 09/03/2022

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PLACE: VEMULAWADA

SIGNATURE OF THE CANDIDATE

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Abstract:

This project presents the design and implementation of an Alcohol Detection with Engine Locking for cars using the Ultrasonic Sensor and Arduino UNO as the MCU (Master Control Unit). The system will continuously monitor level of alcohol concentration in alcohol detection sensor and thus turn off the engine of vehicle if the alcohol concentration is above threshold level. The model will also send the message of whereabouts of the vehicle through SIM900A. The project provides an efficient solution to control accidents due to drunk driving.

Key Words: *Arduino UNO, MQ-3 Sensor, Ultrasonic sensor, Buzzer, LED, SIM 900, DC Motor.*

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. 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), particularly business and serious duty trucks drivers interact in drink- driving 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 number of road accidents caused due to drunk driving

CHAPTER 2

LITERATURE SURVEY

- 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.

3.1 AIM OF THE PROJECT:-

The design and implementation of an Alcohol Detection with Engine Locking for cars using the Ultrasonic Sensor and Arduino UNO as the MCU (Master Control Unit).

3.2 EXISTING SYSTEM:-

The existing system is external system. The driver blow the device it find the drink or not.

The main reason for driving drunk is that the police are not able to check each and every car and even if they catch any one the police can be easily bribed.

So there is a need for an effective system to check drunken drivers.

3.3 PROPOSED SYSTEM:-

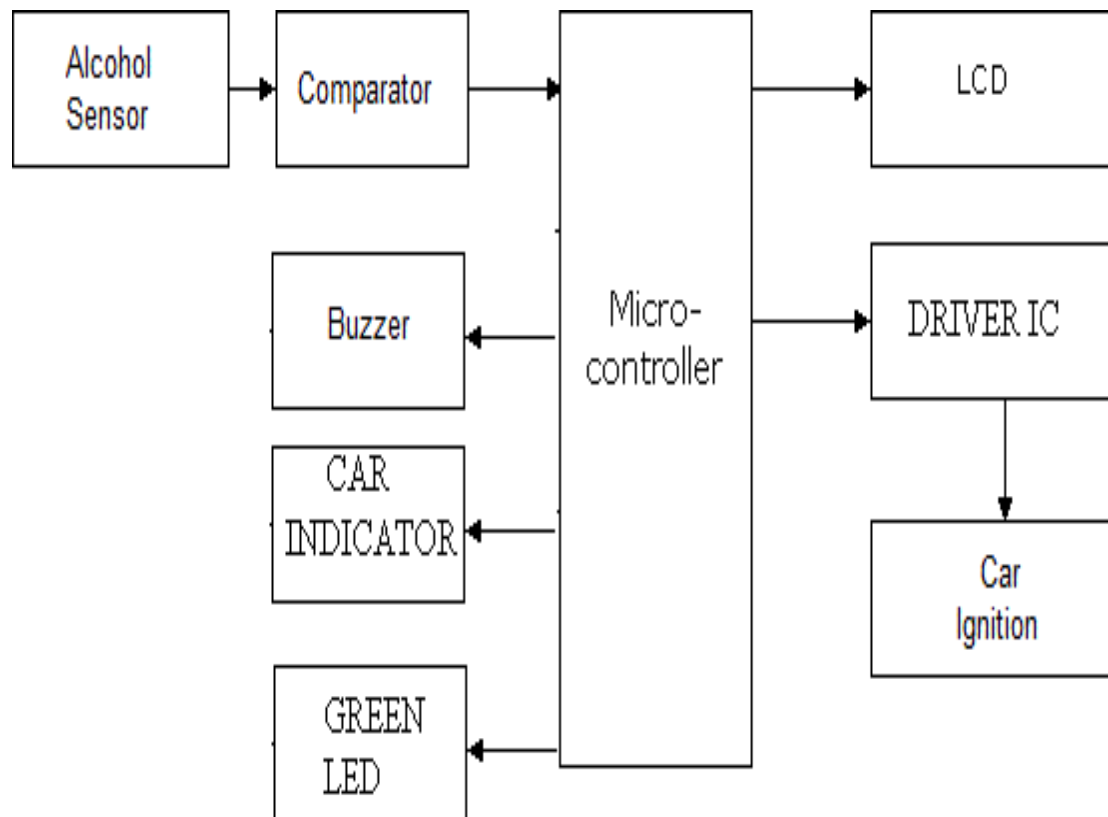
The proposed system has to create on effective alcohol detector in vehicle. It is internal system to connect on the vehicle ignition

The “Alcohol Sensor” to check on driver is drink or not. If the driver is drink the vehicle is not started couldn't moved and send the SMS on authorized person through GSM.

DESCRIPTION:

The main purpose behind this project is “Drunk driving detection”. Now a days, many accidents are happening because of the alcohol consumption of the driver or the person who is driving the vehicle. Thus Drunk driving is a major reason of accidents in almost all contries all over the world. Alcohol Detector in Car project is designed for the safety of the people seating inside the car. This project should be fitted / installed inside the vehicle.

BLOCK DIAGRAM :



POWER SUPPLY:

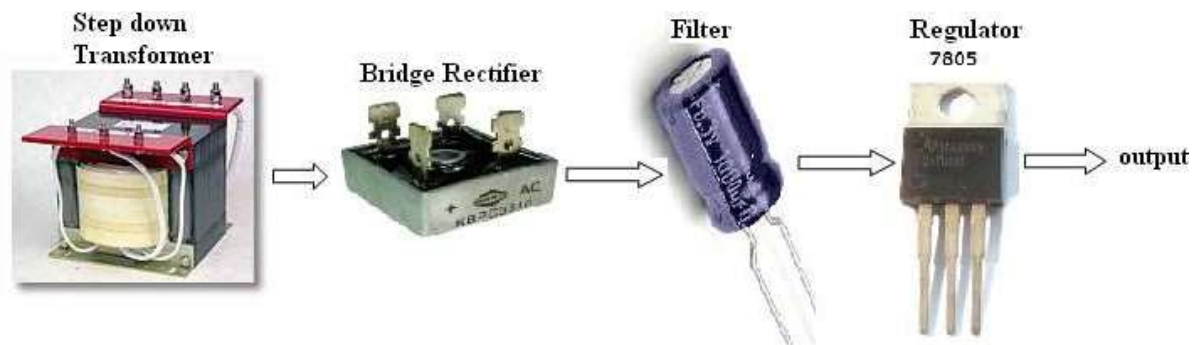


FIG 1

DESCRIPTION IN DETAILS:

The main unit of this project is an “Alcohol sensor”. If the person inside car has consumed alcohol then it is detected by the sensor. Sensor gives this signal to a comparator IC. The output of comparator is connected to the microcontroller. Microcontroller is the heart of this project. It is the CPU of the complete circuit. Microcontroller gives high pulse to the buzzer circuit and the buzzer is turned on. At the same time a relay is turned off. Due to this the ignition of the car is deactivated.

APPLICATIONS AND ADVANTAGES:

Applications of Alcohol Detector in Car:

- 1) “Alcohol Detector project” can be used in the various vehicles for detecting whether the driver has consumed alcohol or not.
- 2) This project can also be used in various companies or organisation to detect alcohol consumption of employees .

Advantages of Alcohol Detector project:

- 1) “Alcohol Detection System in Cars” provides an automatic safety system for cars and other vehicles as well.

FUTURE DEVELOPMENT:

- 1) We can implement GSM technology to inform the relatives or owners of the vehicle about the alcohol consumption.
- 2) We can implement GPS technology to find out the location of the vehicle.

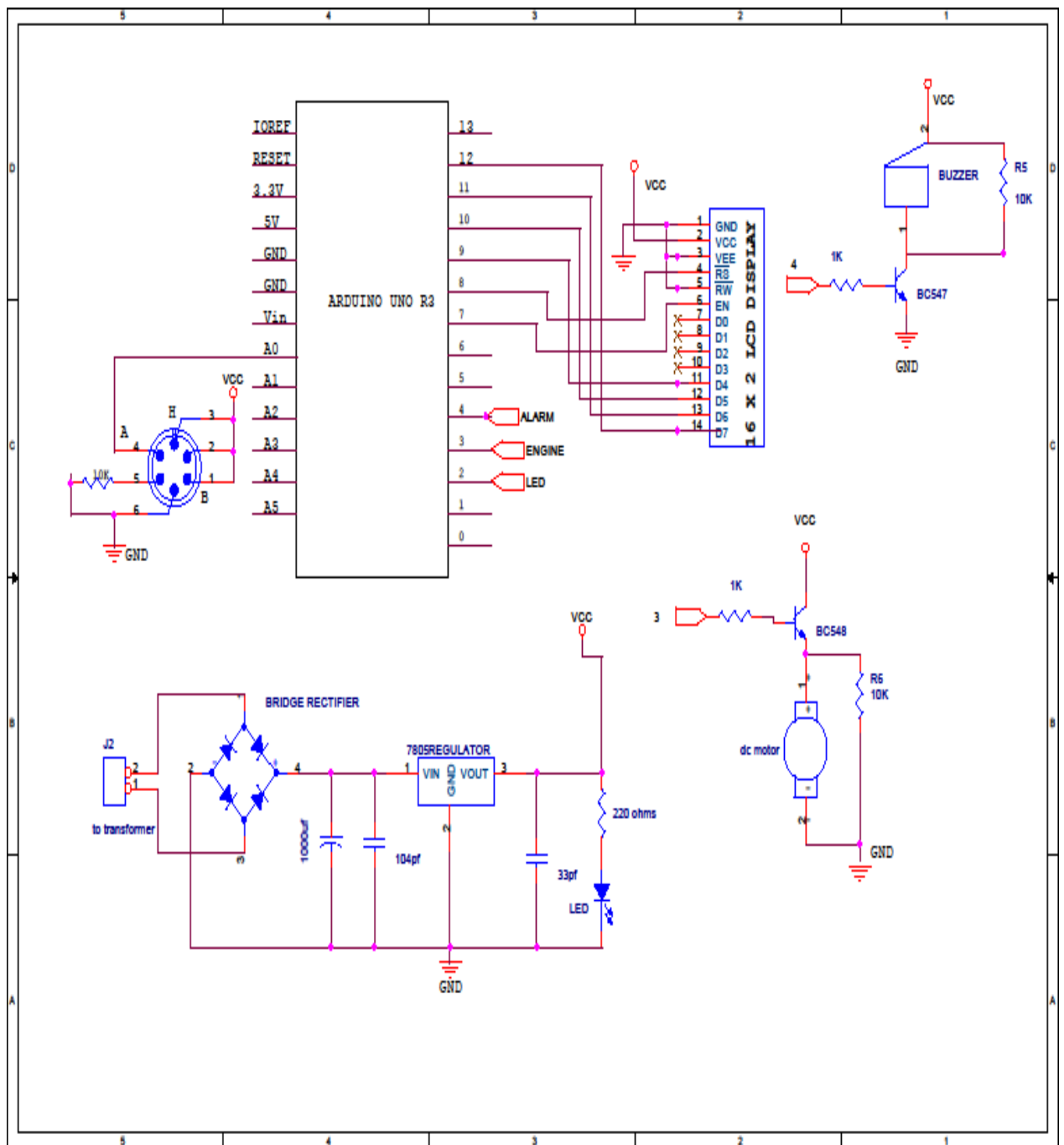
HARDWARE REQUIREMENT :

- ✚ Microcontroller arduino uno r3
- ✚ ALCOHAL SENSOR
- ✚ LM324 COMPARATOR
- ✚ BUZZER
- ✚ LED'S
- ✚ DC KMOTR(IGNITION)
- ✚ DRIVER IC
- ✚ LCD(16X2)

SOFTWARE REQUIREMENT:

- ✚ Embedded C
- ✚ Keil microvision3
- ✚ Express PCB

SCHEMATIC DIAGRAM :



INTRODUCTION TO EMBEDDED SYSTEMS:

Embedded systems are electronic devices that incorporate microprocessors with in Their implementations. The main purposes of the microprocessors are to simplify the system design and provide flexibility. Having a microprocessor in the device means that removing the bugs, making modifications, or adding new features are only matters of rewriting the software that controls the device. Or in other words embedded computer systems are electronic systems that include a microcomputer to perform a specific dedicated application. The computer is hidden inside these products. Embedded systems are ubiquitous. Every week millions of tiny computer chips come pouring out of factories finding their way into our everyday products.

Embedded systems are self-contained programs that are embedded within a piece of hardware. Whereas a regular computer has many different applications and software that can be applied to various tasks, embedded systems are usually set to a specific task that cannot be altered without physically manipulating the circuitry. Another way to **think of an embedded system** is as a computer system that is created with optimal efficiency, thereby allowing it to complete specific functions as quickly as possible.

Embedded systems designers usually have a significant grasp of hardware technologies. They used specific programming languages and software to **develop embedded systems** and manipulate the equipment. When searching online, companies offer embedded systems development kits and other **embedded systems tools** for use by engineers and businesses.

Embedded systems technologies are usually fairly expensive due to the necessary development time and built in efficiencies, but they are also highly valued in specific industries. Smaller businesses may wish to hire a consultant to determine what sort of **embedded systems** will add value to your organization.

CHARACTERISTICS :-

Two major areas of differences are cost and power consumption. Since many embedded systems are produced in the tens of thousands to millions of units range, reducing cost is a major concern. Embedded systems often use a (relatively) slow processor and small memory size to minimize costs.

The slowness is not just clock speed. The whole architecture of the computer is often intentionally simplified to lower costs. For example, embedded systems often use peripherals controlled by synchronous serial interfaces, which are ten to hundreds of times slower than comparable peripherals used in PCs.

Programs on an embedded system often must run with real-time constraints with limited hardware resources: often there is no disk drive, operating system, keyboard or screen.

A flash drive may replace rotating media, and a small keypad and LCD screen may be used instead of a PC's keyboard and screen.

Firmware is the name for software that is embedded in hardware devices, e.g. in one or more ROM/Flash memory IC chips.

Embedded systems are routinely expected to maintain 100% reliability while running continuously for long periods, sometimes measured in years. Firmware is usually developed and tested to much stricter requirements than is general-purpose software, which can usually be easily restarted if a problem occurs.

Platform

There are many different CPU architectures used in embedded designs. This in contrast to the desktop computer market, which as of this writing (2003) is limited to just a few competing architectures, mainly the Intel/AMD x86, and the Apple/Motorola/IBM PowerPC, used in the Apple Macintosh.

One common configuration for embedded systems is the *system on a chip*, an application-specific integrated circuit, for which the CPU was purchased as intellectual property to add to the IC's design.

TOOLS:-

Like a typical computer programmer, embedded system designers use compilers, assemblers and debuggers to develop an embedded system.

Those software tools can come from several sources:

Software companies that specialize in the embedded market Ported from the GNU software development tools.

Sometimes, development tools for a personal computer can be used if the embedded processor is a close relative to a common PC processor.

Embedded system designers also use a few software tools rarely used by typical computer programmers.

Some designers keep a utility program to turn data files into code, so that they can include any kind of data in a program.

Most designers also have utility programs to add a checksum or CRC to a program, so it can check its program data before executing it.

OPERATING SYSTEM

They often have no operating system, or a specialized embedded operating system (often a real-time operating system), or the programmer is assigned to port one of these to the new system.

DEBUGGING

Debugging is usually performed with an in-circuit emulator, or some type of debugger that can interrupt the micro controller's internal microcode.

The microcode interrupt lets the debugger operate in hardware in which only the CPU works. The CPU-based debugger can be used to test and debug the electronics of the computer from the viewpoint of the CPU. This feature was pioneered on the PDP-11.

Developers should insist on debugging which shows the high-level language, with breakpoints and single stepping, because these features are widely available. Also, developers should write and use simple logging facilities to debug sequences of

real-time events. PC or mainframe programmers first encountering this sort of programming often become confused about design priorities and acceptable methods. Mentoring, code-reviews and ego less programming are recommended.

DESIGN OF EMBEDDED SYSTEMS

The electronics usually uses either a microprocessor or a micro controller. Some large or old systems use general-purpose mainframes computers or minicomputers.

START-UP

All embedded systems have start-up code. Usually it disables interrupts, sets up the electronics, tests the computer (RAM, CPU and software), and then starts the application code. Many embedded systems recover from short-term power failures by restarting (without recent self-tests). Restart times under a tenth of a second are common.

Many designers have found one of more hardware plus software-controlled LEDs useful to indicate errors during development (and in some instances, after product release, to produce troubleshooting diagnostics). A common scheme is to have the electronics turn off the LED(s) at reset, whereupon the software turns it on at the first opportunity, to prove that the hardware and start-up software have performed their job so far. After that, the software blinks the LED(s) or sets up light patterns during normal operation, to indicate program execution progress and/or errors. This serves to reassure most technicians/engineers and some users.

THE CONTROL LOOP

In this design, the software simply has a loop. The loop calls subroutines. Each subroutine manages a part of the hardware or software. Interrupts generally set flags, or update counters that are read by the rest of the software.

A simple API disables and enables interrupts. Done right, it handles nested calls in nested subroutines, and restores the preceding interrupt state in the outermost enable. This is one of the simplest methods of creating an exokernel.

Typically, there's some sort of subroutine in the loop to manage a list of software timers, using a periodic real time interrupt. When a timer expires, an associated subroutine is run, or flag is set.

Any expected hardware event should be backed-up with a software timer. Hardware events fail about once in a trillion times. That's about once a year with modern hardware. With a million mass-produced devices, leaving out a software timer is a business disaster.

State machines may be implemented with a function-pointer per state-machine (in C++, C or assembly, anyway). A change of state stores a different function into the pointer. The function pointer is executed every time the loop runs.

Many designers recommend reading each IO device once per loop, and storing the result so the logic acts on consistent values.

Many designers prefer to design their state machines to check only one or two things per state. Usually this is a hardware event, and a software timer.

Designers recommend that hierarchical state machines should run the lower-level state machines before the higher, so the higher run with accurate information.

Complex functions like internal combustion controls are often handled with multi-dimensional tables. Instead of complex calculations, the code looks up the values. The software can interpolate between entries, to keep the tables small and cheap.

One major weakness of this system is that it does not guarantee a time to respond to any particular hardware event. Careful coding can easily assure that nothing disables interrupts for long. Thus interrupt code can run at very precise timings. Another major weakness of this system is that it can become complex to add new features. Algorithms that take a long time to run must be carefully broken down so only a little piece gets done each time through the main loop.

This system's strength is its simplicity, and on small pieces of software the loop is usually so fast that nobody cares that it is not predictable.

Another advantage is that this system guarantees that the software will run. There is no mysterious operating system to blame for bad behavior.

USER INTERFACES

User interfaces for embedded systems vary wildly, and thus deserve some special comment. Designers recommend testing the user interface for usability at the earliest possible instant. A quick, dirty test is to ask an executive secretary to use cardboard models drawn with magic markers, and manipulated by an engineer. The videotaped result is likely to be both humorous and very educational. In the tapes, every time the engineer talk, the interface has failed: It would cause a service call.

Exactly one person should approve the user interface. Ideally, this should be a customer, the major distributor or someone directly responsible for selling the system. The decision maker should be able to decide. The problem is that a committee will never make up its mind, and neither will some people. Not doing this causes avoidable, expensive delays. A usability test is more important than any number of opinions.

Interface designers at PARC, Apple Computer, Boeing and HP minimize the number of types of user actions. For example, use two buttons (the absolute minimum) to control a menu system (just to be clear, one button should be "next menu entry" the other button should be "select this menu entry"). A touch-screen or screen-edge buttons also minimize the types of user actions.

Another basic trick is to minimize and simplify the type of output. Designs should consider using a status light for each interface plug, or failure condition, to tell what failed. A cheap variation is to have two light bars with a printed matrix of errors that they select- the user can glue on the labels for the language that she speaks.

For example, Boeing's standard test interface is a button and some lights. When you press the button, all the lights turn on. When you release the button, the lights with failures stay on. The labels are in Basic English.

For another example, look at a small computer printer. You might have one next to your computer. Notice that the lights are labeled with stick-on labels that can be printed in any language. Really look at it.

Designers use colors. Red means the users can get hurt- think of blood. Yellow means something might be wrong. Green means everything's OK.

Another essential trick is to make any modes absolutely clear on the user's display.

If an interface has modes, they must be reversible in an obvious way.

Most designers prefer the display to respond to the user. The display should change immediately after a user action. If the machine is going to do anything, it should start within 7 seconds, or give progress reports.

If a design needs a screen, many designers use plain text. It can be sold as a temporary expedient. Why is it better than pictures? Users have been reading signs for years. A GUI is pretty and can do anything, but typically adds a year from artist, approval and translator delays and one or two programmers to a project's cost, without adding any value. Often, a clever GUI actually confuses users.

If a design needs to point to parts of the machine (as in copiers), these are labeled with numbers on the actual machine, that are visible with the doors closed.

A network interface is just a remote screen. It needs the same caution as any other user interface.

One of the most successful general-purpose screen-based interfaces is the two menu buttons and a line of text in the user's native language. It's used in pagers, medium-priced printers, network switches, and other medium-priced situations that require complex behavior from users.

When there's text, there are languages. The default language should be the one most widely understood. Right now this is English. French and Spanish follow.

Most designers recommend that one use the native character sets, no matter how painful. People with peculiar character sets feel coddled and loved when their language shows up on machinery they use.

Text should be translated by professional translators, even if native speakers are on staff. Marketing staff have to be able to tell foreign distributors that the translations are professional.

A foreign organization should give the highest-volume distributor the duty to review and correct any translations in his native language. This stops critiques by other native speakers, who tend to believe that no foreign organization will ever know their language as well as they.

4.1 ARDUINO UNO

Arduino UNO is a microcontroller board it has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, 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 an AC-to-DC adapter or battery to get started

4.1.1

ARDUINO

WHAT IS ARDUINO?

Arduino is a tool for making computers that can sense and control more of the physical world than your desktop computer. It's an open-source physical computing platform based on a simple microcontroller board, and a development environment for writing software for the board.

Arduino can be used to develop interactive objects, taking inputs from a variety of switches or sensors, and controlling a variety of lights, motors, and other physical outputs. Arduino projects can be stand-alone, or they can communicate with software running on your computer (e.g. Flash, Processing, MaxMSP.) The boards can be assembled by hand or purchased preassembled; the open-source IDE can be downloaded for free.

The Arduino programming language is an implementation of Wiring, a similar physical computing platform, which is based on the Processing multimedia programming environment.

WHY ARDUINO?

There are many other microcontrollers and microcontroller platforms available for physical computing. Parallax Basic Stamp, Netmedia's BX-24, Phidgets, MIT's Handy board, and many others offer similar functionality. All of these tools take the messy details of microcontroller programming and wrap it up in an easy-to-use package. Arduino also simplifies the process of working with microcontrollers, but it offers some advantage for teachers, students, and interested amateurs over other systems:

- **Inexpensive** - Arduino boards are relatively inexpensive compared to other microcontroller platforms. The least expensive version of the Arduino module can be assembled by hand, and even the pre-assembled Arduino modules cost less than \$50

- **Cross-platform** - The Arduino software runs on Windows, Macintosh OSX, and Linux operating systems. Most microcontroller systems are limited to Windows.
- **Simple, clear programming environment** - The Arduino programming environment is easy-to-use for beginners, yet flexible enough for advanced users to take advantage of as well. For teachers, it's conveniently based on the Processing programming environment, so students learning to program in that environment will be familiar with the look and feel of Arduino
- **Open source and extensible software**- The Arduino software is published as open source tools, available for extension by experienced programmers. The language can be expanded through C++ libraries, and people wanting to understand the technical details can make the leap from Arduino to the AVR C programming language on which it's based. Similarly, you can add AVR-C code directly into your Arduino programs if you want to.
- **Open source and extensible hardware** - The Arduino is based on Atmel's ATMEGA8 and ATMEGA168/ATMEGA2560 microcontrollers. The plans for the modules are published under a Creative Commons license, so experienced circuit designers can make their own version of the module, extending it and improving it. Even relatively inexperienced users can build the breadboard version of the module in order to understand how it works and save money

OVERVIEW:-

The Uno is a microcontroller board based on the [ATmega328P](#). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header 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.. You can tinker with your UNO without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.

"Uno" means one in Italian and was chosen to mark the release of Arduino Software (IDE) 1.0. The Uno board and version 1.0 of Arduino Software (IDE) were the reference versions of Arduino, now evolved to newer releases. The Uno board is the first in a series of USB Arduino boards, and the reference model for the Arduino platform; for an extensive list of current, past or outdated boards see the Arduino index of boards.

You can find [here](#) your board warranty informations.

Getting Started

You can find in the [Getting Started section](#) all the information you need to configure your board, use the [Arduino Software \(IDE\)](#), and start tinker with coding and electronics.

Need Help?

- On the Software [on the Arduino Forum](#)
- On Projects [on the Arduino Forum](#)
- On the Product itself through [our Customer Support](#)

Technical specs

Microcontroller	ATmega328P
Operating Voltage	5V
Input Voltage (recommended)	7-12V
Input Voltage (limit)	6-20V
Digital I/O Pins	14 (of which 6 provide PWM output)
PWM Digital I/O Pins	6
Analog Input Pins	6
DC Current per I/O Pin	20 mA
DC Current for 3.3V Pin	50 mA

Flash Memory	32 KB (ATmega328P) of which 0.5 KB used by bootloader
SRAM	2 KB (ATmega328P)
EEPROM	1 KB (ATmega328P)
Clock Speed	16 MHz
Length	68.6 mm
Width	53.4 mm
Weight	25 g

BASIC ARDUINO CODE DEFINITIONS:

setup(): A function present in every Arduino sketch. Run once before the loop() function. Often used to set pinmode to input or output. The setup() function looks like:

```
void setup( ){
    //code goes here
}
```

loop(): A function present in every single Arduino sketch. This code happens over and over again. The loop() is where (almost) everything happens. The one exception to this is setup() and variable declaration. ModKit uses another type of loop called “forever()” which executes over Serial. The loop() function looks like:

```
void loop( ) {
    //code goes here
}
```

input: A pin mode that intakes information.

output: A pin mode that sends information.

HIGH: Electrical signal present (5V for Uno). Also ON or True in boolean logic.

LOW: No electrical signal present (0V). Also OFF or False in boolean logic.

digitalRead: Get a HIGH or LOW reading from a pin already declared as an input.

digitalWrite: Assign a HIGH or LOW value to a pin already declared as an output.

analogRead: Get a value between or including 0 (LOW) and 1023 (HIGH). This allows you to get readings from analog sensors or interfaces that have more than two states.

analogWrite: Assign a value between or including 0 (LOW) and 255 (HIGH). This allows you to set output to a PWM value instead of just HIGH or LOW.

PWM: Stands for Pulse-Width Modulation, a method of emulating an analog signal through a digital pin. A value between or including 0 and 255. Used with analogWrite.

ARDUINO UNO PIN TYPE DEFINITIONS: (TAKE A LOOK AT YOUR ARDUINO BOARD)

Reset	3v3	5v	Gnd	Vin	Analog In	RX/TX	Digital	PWM(~)	AREF
Resets Arduino sketch on board	3.3 volts in and out	5 volts in and out	Ground	Voltage in for sources over 7V (9V - 12V)	Analog inputs, can also be used as Digital	Serial comm. Receive and Transmit	Input or output, HIGH or LOW	Digital pins with output option of PWM	External reference voltage used for analog

BASIC ARDUINO PIN REFERENCE SHEET :-

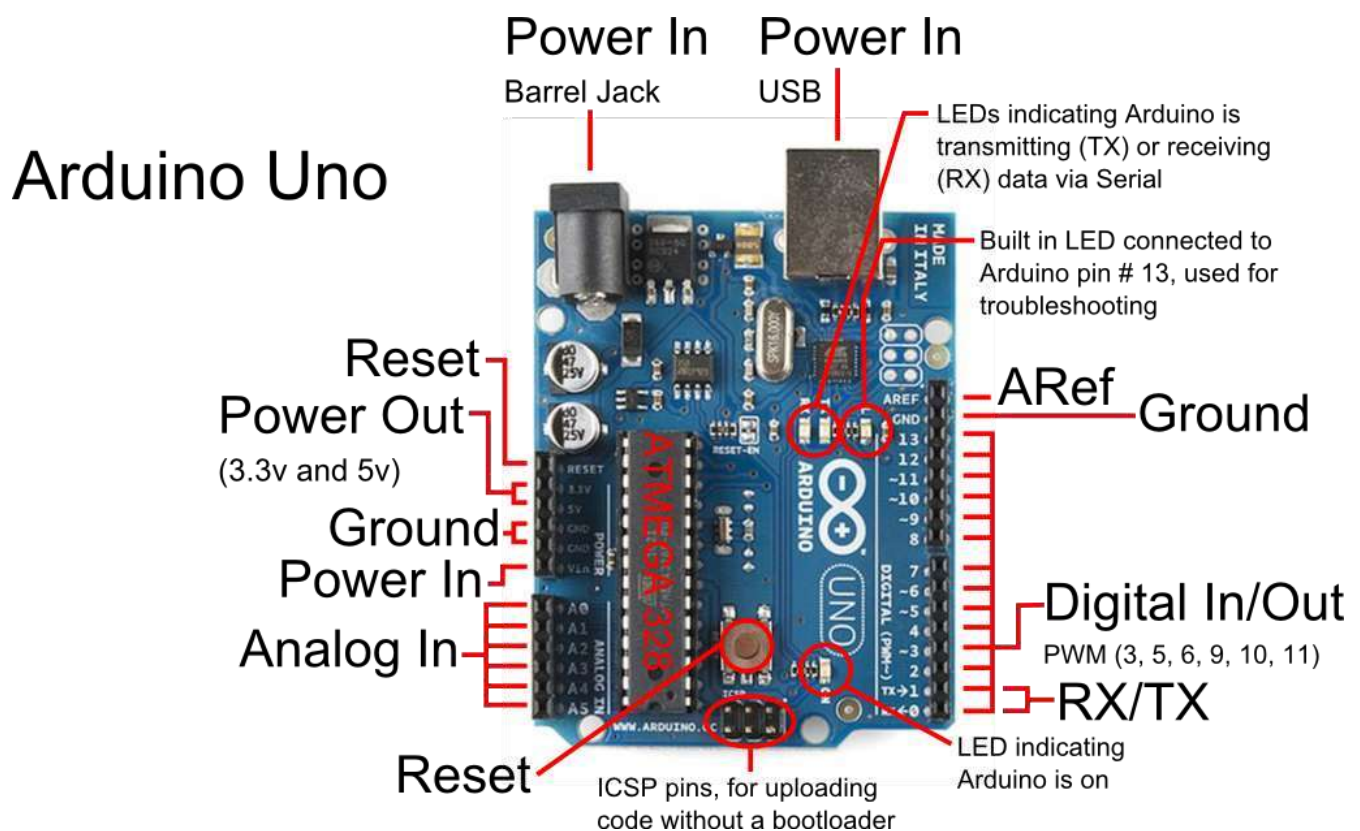


FIG 2

These boards below use the same micro-controller, just in a different package. The Lilypad is designed for use with conductive thread instead of wire and the Arduino Mini is simply a smaller package without the USB, Barrel Jack and Power Outs. Other boards in the Arduino family can be found at <http://arduino.cc/en/Main/Hardware>.

What is a voltage divider?

Voltage dividers are a way to produce a voltage that is a fraction of the original voltage.

Why is a voltage divider useful?

One of the ways this is useful is when you want to take readings from a circuit that has a voltage beyond the limits of your input pins. By creating a voltage divider you can be sure that you are getting an accurate reading of a voltage from a circuit. Voltage dividers are also used to provide an analog Reference signal.

What is in a voltage divider?

A voltage divider has three parts; two resistors and a way to read voltage between the two resistors.

How do you put together a voltage divider?

It's really pretty easy. Here is a schematic and explanation detailing how:

VOLTAGE DIVIDERS :

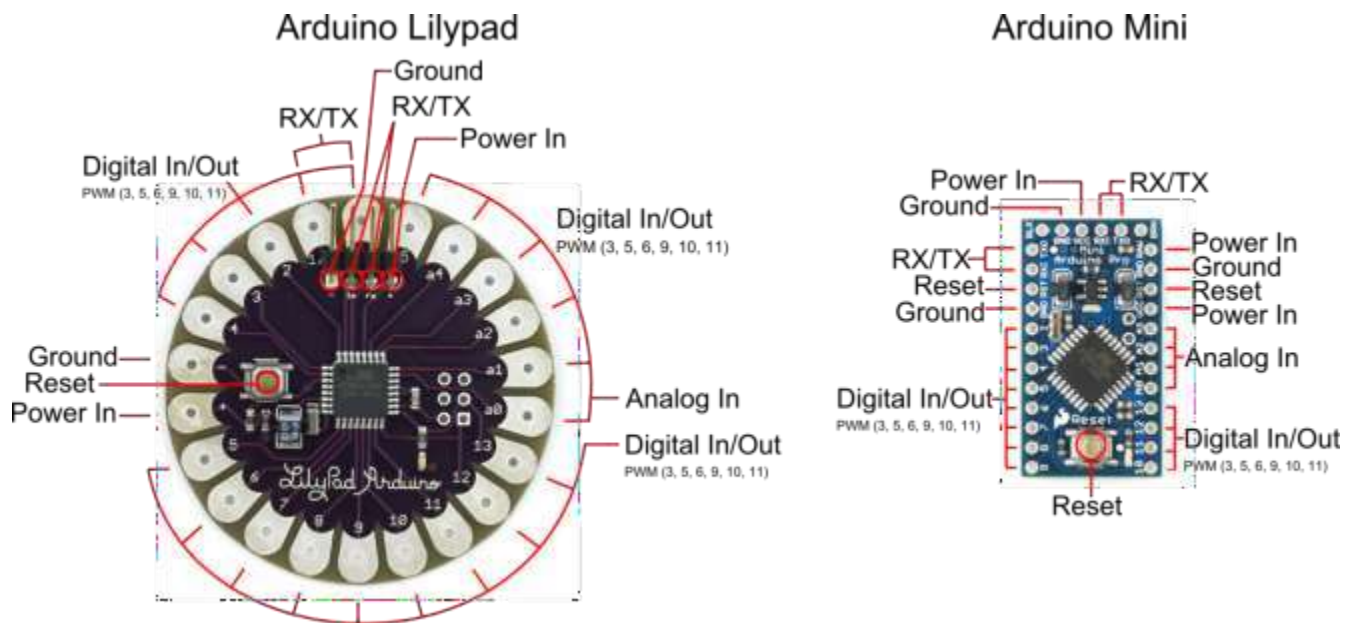
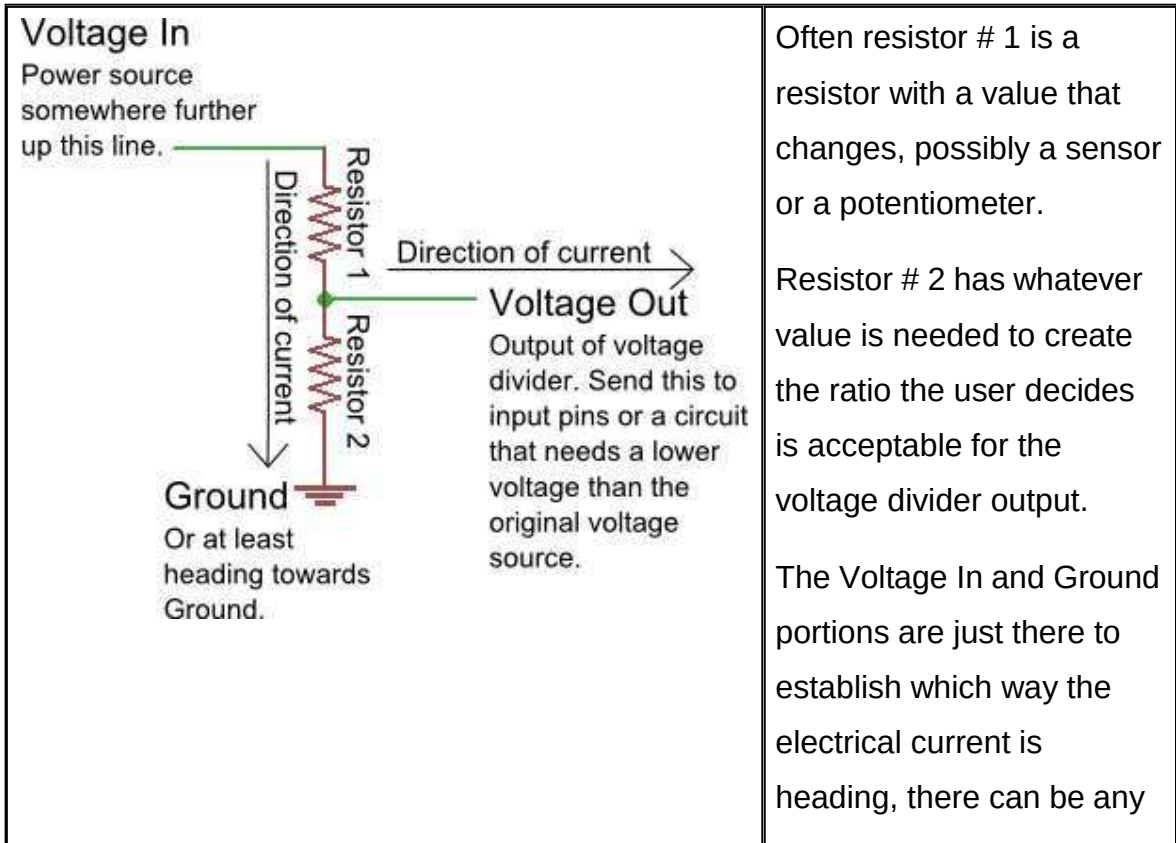


FIG 3



	number of circuits before and after the voltage divider. Here is the equation that represents how a voltage divider works: $V_{out} = V_{in} \frac{R_2}{(R_1 + R_2)}$ If both resistors have the same value then Voltage Out is equal to $\frac{1}{2}$ Voltage In.
--	--

Ok, how is this voltage divider information used?

It depends on what you want to do with it really. There are two different purposes outlined above for the voltage divider, we will go over both.

If you wish to use the voltage divider as a sensor reading device first you need to know the maximum voltage allowed by the analog inputs you are using to read the signal. On an Arduino this is 5V. So, already we know the maximum value we need for Vout. The Vin is simply the amount of voltage already present on the circuit before it reaches the first resistor. You should be able to find the maximum voltage your sensor outputs by looking on the Datasheet, this is the maximum amount of voltage your sensor will let through given the voltage in of your circuit. Now we have exactly one variable left, the value of the second resistor. Solve for R2 and you will have all the components of your voltage divider figured out! We solve for R1's highest value because a smaller resistor will simply give us a smaller signal which will be readable by our analog inputs.

Powering an analog Reference is exactly the same as reading a sensor except you have to calculate for the Voltage Out value you want to use as the analog Reference.

Given three of these values you can always solve for the missing value using a little algebra, making it pretty easy to put together your own voltage divider. The

S.I.K. has many voltage dividers in the example circuits. These include: Circuits # 7, 8, 9, 13 and 14. depending on type.

- To take an Input reading use *analogRead(pinNumber)*; (for analog)
- Or *digitalRead(pinNumber)*; (for digital)
- Digital Input needs a pinMode command such as *pinMode(pinNumber, INPUT)*;
- Analog Input varies from 0 to 1023
- Digital Input is always either HIGH or LOW

Examples of Input:

Push Buttons, Potentiometers, Photoresistors, Flex Sensors

RESISTANCE

Resistance is an important concept when you are creating circuits. Resistance is the difficulty a current encounters when it passes through a component. Everything that electricity passes through provides some measure of resistance, wires, motors, sensors, even the human body!

Measuring voltage, current and resistance are all done in different ways. To measure resistance you disconnect (turn off) your circuit and place both multimeter leads on either side of the portion of the circuit you wish to measure. For example: for measuring just a component you would place your leads on the power and ground leads of the component. To measure the resistance of multiple components you leave them connected and place the positive (red) multimeter lead closer to the disconnected power source and the negative (black) multimeter lead closer to the ground. Sometimes you will want to measure the resistance of input and output leads, but more often you will find yourself measuring resistance along the power to ground circuit. It is important to know how much resistance is present in components and circuits for many reasons. Too much resistance and the current will never travel through the whole circuit, too little and the current may fry some of your components! But most importantly you can use resistance to choose the path the current takes through your circuit.

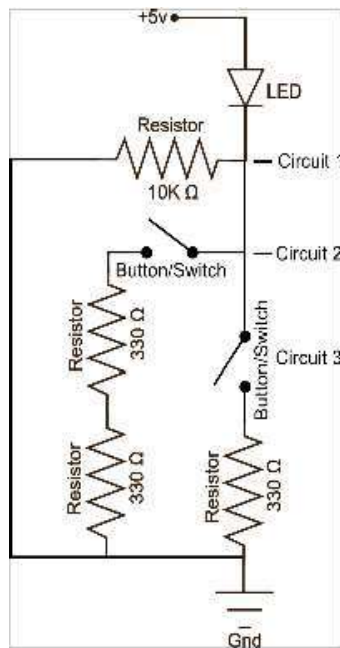


FIG 4

Hook up the circuit to the right using red LEDs. (Don't hook up the power yet.)

Measure the resistance of each of the possible paths the current can take from power (5v) to ground. There are three possible paths. You will have to measure each component separately and then add the resistance up for the total. You will can add the component's resistance together because the components are in series, if they were parallel it would require more math. Record the total resistance for each circuit below. (Hint: you won't be able to measure the LED)

Circuit 1: _____ Ω Circuit 2: _____ Ω Circuit 3: _____ Ω Now connect the power and, one at a time, press the two buttons. Which circuit makes the LED the dimmest? Circuit # _____

If you press both buttons which path does the current take? Circuit # _____

If the voltage is staying at 5v in this circuit no matter which paths are closed, there is a way to calculate the current given the resistance. Write the name of the law and the equation that solves for resistance below. Label all variables.

Now measure the resistance of a potentiometer when it is dialed all the way up and down. Record the highest and lowest values you get.

Highest: _____ Ω

Lowest: _____ Ω

Redraw the schematic above (use the back of the worksheet if necessary) but use a potentiometer to control the LED brightness instead of the buttons and various resistors. Remember that you must have at least 330Ω of total resistance, otherwise you'll burn out your LED!

Since a circuit or component does not need a current running through it in order to measure the resistance you can take your multimeter and measure the resistance of anything you can think of. Wander around and measure the resistance of various objects. Start with a penny. Record the most interesting things that have resistance and the value of their resistance below. List at least three

4.8 LIQUID CRYSTAL DISPLAY (LCD):

Liquid crystal display a type of display used in digital watches and many portable computers.



LCD displays utilize two sheets of polarizing material with a liquid crystal solution between them. An electric current passed through the liquid causes the crystals to align so that light cannot pass through them. Each crystal, therefore, is like a shutter, either allowing light to pass through or blocking the light.

The liquid crystals can be manipulated through an applied electric voltage so that light is allowed to pass or is blocked.

By carefully controlling where and what wavelength (color) of light is allowed to pass, the LCD monitor is able to display images. A back light provides LCD monitor's brightness.

Other advances have allowed LCD's to greatly reduce liquid crystal cell response times.

Response time is basically the amount of time it takes for a pixel to "change colors". In reality response time is the amount of time it takes a liquid crystal cell to go from being active to inactive

Here the LCD is used at both the Transmitter as well as the receiver side.

The input which we give to the microcontroller is displayed on the LCD of the transmitter side and the message sent is received at the receiver side which displays at the receiver end of the LCD and the corresponding operation is performed

They make complicated equipment easier to operate. LCDs come in many shapes and sizes but the most common is the 16 character x 4 line display with no backlight.

It requires only 11 connections – eight bits for data (which can be reduced to four if necessary) and three control lines (we have only used two here). It runs off a 5V DC supply and only needs about 1mA of current.

The display contrast can be varied by changing the voltage into pin 3 of the display,

PIN DESCRIPTION OF LCD:

Pins	Description
1	Ground
2	Vcc
3	Contrast Voltage
4	"R/S" _Instruction/Register Select
5	"R/W" _Read/Write LCD Registers
6	"E" Clock
7 - 14	Data I/O Pins

From this description, the interface is a parallel bus, allowing simple and fast reading/writing of data to and from the LCD. This waveform will write an ASCII Byte out to the LCD's screen.

PIN DESCRIPTIONS

Vcc, Vss and Vee

While Vcc and Vss provide +5V and ground respectively, Vee is used for controlling LCD contrast.

PIN	SYMBOL	I/O	DESCRIPTION
1	Vss	--	Ground
2	Vcc	--	+5V power supply
3	Vee	--	Power supply to control contrast
4	RS	I	RS=0 to select command register RS=1 to select data register

5	R/W	I	R/W=0 for write R/W=1 for read
6	EN	I/O	Enable
7	DB0	I/O	The 8-bit data bus
8	DB1	I/O	The 8-bit data bus
9	DB2	I/O	The 8-bit data bus
10	DB3	I/O	The 8-bit data bus
11	DB4	I/O	The 8-bit data bus
12	DB5	I/O	The 8-bit data bus
13	DB6	I/O	The 8-bit data bus
14	DB7	I/O	The 8-bit data bus

The ASCII code to be displayed is eight bits long and is sent to the LCD either four or eight bits at a time.

If four bit mode is used, two "nibbles" of data (Sent high four bits and then low four bits with an "E" Clock pulse with each nibble) are sent to make up a full eight bit transfer.

The "E" Clock is used to initiate the data transfer within the LCD.

Deciding how to send the data to the LCD is most critical decision to be made for an LCD interface application.

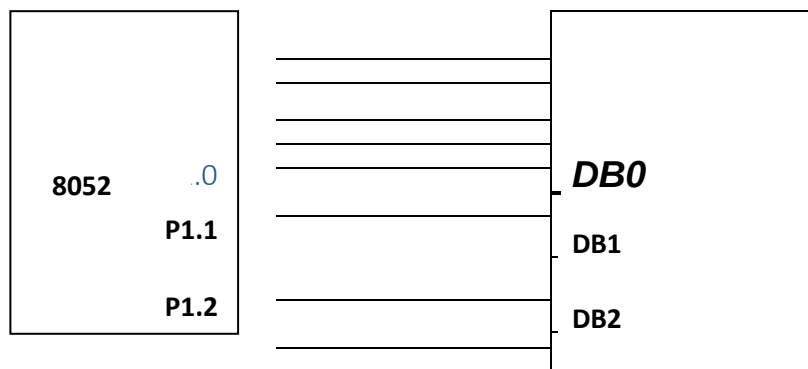
Eight-bit mode is best used when speed is required in an application and at least ten I/O pins are available.

The "R/S" bit is used to select whether data or an instruction is being transferred between the microcontroller and the LCD.

If the Bit is set, then the byte at the current LCD "Cursor" Position can be read or written.

When the Bit is reset, either an instruction is being sent to the LCD or the execution status of the last instruction is read back

INTERFACING LCD WITH CONTROLLER:



Interfacing a LCD with a microcontroller.

GSM Modem (SIM900) :

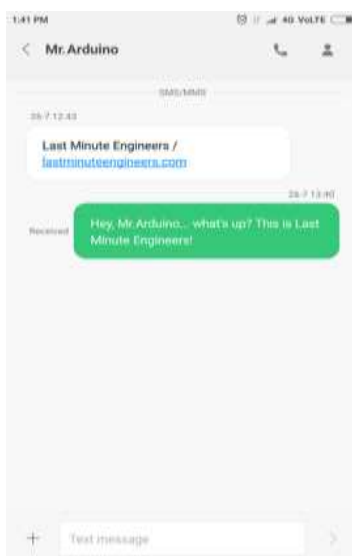
A GSM modem is a specialized type of modem which accepts a SIM card, and operates over a subscription to a mobile operator, just like a mobile phone. A GSM modem can be a dedicated Modem device with a serial, USB or Bluetooth connection, it can be a mobile phone that provides GSM modem capabilities. A GSM modem exposes an interface that allows applications and now SMS to send and receive messages over the modem interface. In the proposed system, GSM SIM 900 module is used to send a message to the mobile phone when the accident occurred.

GSM SIM 900 module is built with SIMCOM Make SIM900 Quad-band GSM/GPRS engine, works On frequencies 850 MHz, 900 MHz, 1800 MHz and 1900 MHz. It is very compact in size and easy To use as a plug-in GSM Modem. The Modem is designed with 3V/5V TTL interfacing circuitry, Which allows to directly interface to 5V microcontrollers (PIC, Arduino, AVR etc.) as well as 3V Microcontrollers (ARM, ARM Cortex XX, etc.). The baud rate can be configurable from 9600-115200 through AT command. Figure 5 shows the SIM900A V4 GSM/GPRS Wireless Extension Module.



SIM900

FIG 8



SMS



CALL

ADVANTAGES:

LCD interfacing with 8051 is a real-world application. In recent years the LCD is finding widespread use replacing LEDs (seven segment LEDs or other multisegment LEDs).

This is due to following reasons:

1. The declining prices of LCDs.
2. The ability to display numbers, characters and graphics. This is in contrast to LEDs, which are limited to numbers and a few characters. An intelligent LCD display of two lines, 20 characters per line, which is interfaced to the 8051.
3. Incorporation of a refreshing controller into the LCD, thereby relieving the CPU to keep displaying the data.
4. Ease of programming for characters and graphics.

BASIC COMMANDS OF LCD:

When LCD is powered up, the display should show a series of dark squares, possibly only on part of display.

These characters are actually in their off state, so the contrast control should be adjusted anti-clockwise until the squares are just visible.

The display module resets itself to an initial state when power is applied, which curiously the display has blanked off so that even if characters are entered, they cannot be seen.

It is therefore necessary to issue a command at this point, to switch the display on.

PROTOTYPE CIRCUIT:

For a LCD module to be used effectively in any piece of equipment, a microprocessor or a micro controller is usually required to drive it.

However, before attempting to wire the two together, some initial experiments can be performed by connecting a series of switches to the pins of the module.

This can be a quite beneficial step, if even you are thoroughly conversant with the workings of microprocessors.

CIRCUIT DESCRIPTION OF LCD EXPERIMENT:

The circuit can be wired up on a “plug-in-style” prototyping board, using dual-in-line switches for the data lines (S1-S8)

A toggle switch for the RS input (S10) and a momentary action switch (or macro switch) for usage.

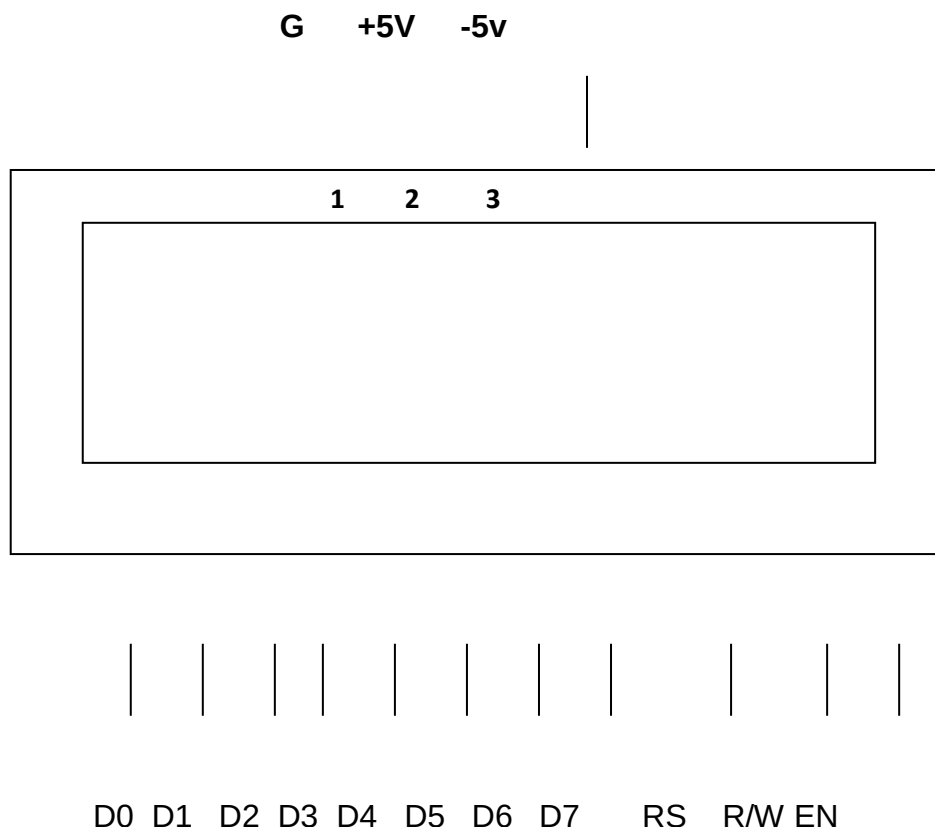
Most of the LCD modules conform to a standard interface specification. A 14pin access is provided having eight data lines, three control lines and three power lines.

The connections are laid out in one of the two common configurations, either two rows of seven pins, or a single row of 14 pins.

One of the, pins are numbered on the LCD’s print circuit board (PCB), but if not, it is quite easy to locate pin1.

Since this pin is connected to ground, it often has a thicker PCB track, connected to it, and it is generally connected to metalwork at same point.

PIN DESCRIPTION:



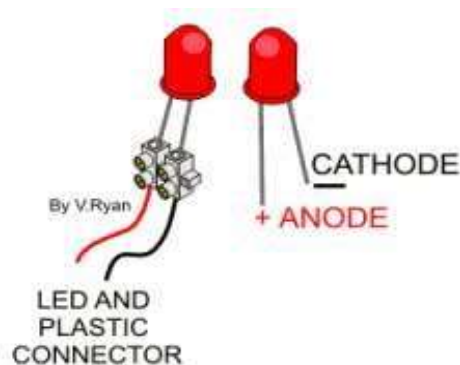
The LCD plays a major role in the entire operation as it has the ability to display the certain data that the user has entitled.

LCD display varies from input to input as there is no specific outline for it to operate.

LIGHT EMITTING DIODE (LED):

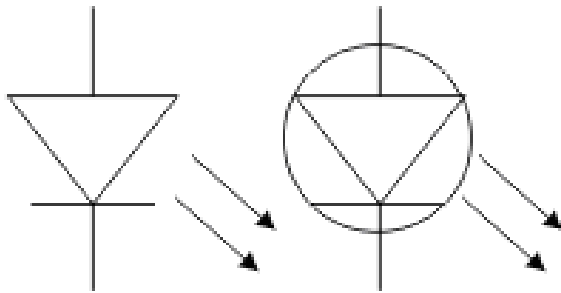
A light-emitting diode (LED) is a semiconductor diode that emits incoherent narrow spectrum light when electrically biased in the forward direction of the pn-junction, as in the common LED circuit. This effect is a form of electroluminescence

While sending a message in the form of bits such as 1, the data is sent to the receiver side correspondingly the LED glows representing the data is being received simultaneously when we send 0 as a data the LED gets off .



Color Coding

Color	Potential Difference
Infrared	1.6 V
Red	1.8 V to 2.1 V
Orange	2.2 V
Yellow	2.4 V
Green	2.6 V
Blue	3.0 V to 3.5 V
White	3.0 V to 3.5 V
Ultraviolet	3.5V



LED SYMBOLS

ADVANTAGES OF LEDS

- LEDs have many advantages over other technologies like lasers. As compared to laser diodes or IR sources
- LEDs have several advantages over conventional incandescent lamps. For one thing, they don't have a filament that will burn out, so they last much longer. Additionally, their small plastic bulb makes them a lot more durable. They also fit more easily into modern electronic circuits.
- The main advantage is **efficiency**. In conventional incandescent bulbs, the light-production process involves generating a lot of heat (the filament must be warmed). This is completely wasted energy, unless you're using the lamp as a heater, because a huge portion of the available electricity isn't going toward producing visible light.
- LEDs generate very little heat. A much higher percentage of the electrical power is going directly to generating light, which cuts down on the electricity demands considerably.
- LEDs offer advantages such as lower cost and longer service life. Moreover LEDs have very low power consumption and are easy to maintain. Many functions can be assigned to a robot easily using different colors of LEDs available.

DISADVANTAGES OF LEDS

- LED performance largely depends on the ambient temperature of the operating environment.
- LEDs must be supplied with the correct current.
- LEDs do not approximate a "point source" of light, so cannot be used in applications needing a highly collimated beam.

But the disadvantages are quite negligible in this project as the negative properties of LEDs do not apply and the advantages far exceed the limitations. So we prefer to use the LED as our light source.

ALCOHAL SENSOR:

Alcohol Sensor – Analog Out

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

Applications

- Breath Analyzer
- Blood Alcohol Concentration Checker
- Alcohol Gas Sensor

Features

- High sensitivity to alcohol and small sensitivity to Benzine
- Fast response and High sensitivity
- Stable and long life
- Simple drive circuit of 5V DC with analog output
- Operation Temperature: -10 to 70 degrees

Warm up Time:

The sensor needs 10 minutes of warm up time after first power is applied. After 10 minutes you can take its readings. During warm up time the output analog voltage would go up from 4.5V to 0.5V in variation down gradually. During this warm up time the sensor reading should be ignored.

Using the Sensor:

The sensor needs 5V to operate, Give regulated +5V DC supply, The sensor will take around

180mA supply. The sensor will heat a little bit since it has internal heater that heats the sensing

element.

Testing the sensor:

Measure the output voltage through multi-meter between A.OUT and Ground pins or Use a

microcontroller to measure the voltage output. Best way to check the sensor is take a bottle of after shave liquid and open the cap. Take the sensor near the bottle output. You will see increase in the readings.

DERIVING GAS CONCENTRATION FROM OUTPUT VOLTAGE

Here is a the equation which convert analog output to mg/L gas concentration

$\text{Mg/L} = \text{Analog Voltage in mV} \times 0.002$

Example: Gas sensor voltage is giving output as

2500mV(2.5V) So the gas concentration in mg/L = $2500 \times 0.002 = 5 \text{ mg/L}$

Here is the table for your reference

Mg/L: 0.2 0.3 0.5 1 2 3 5 9 10

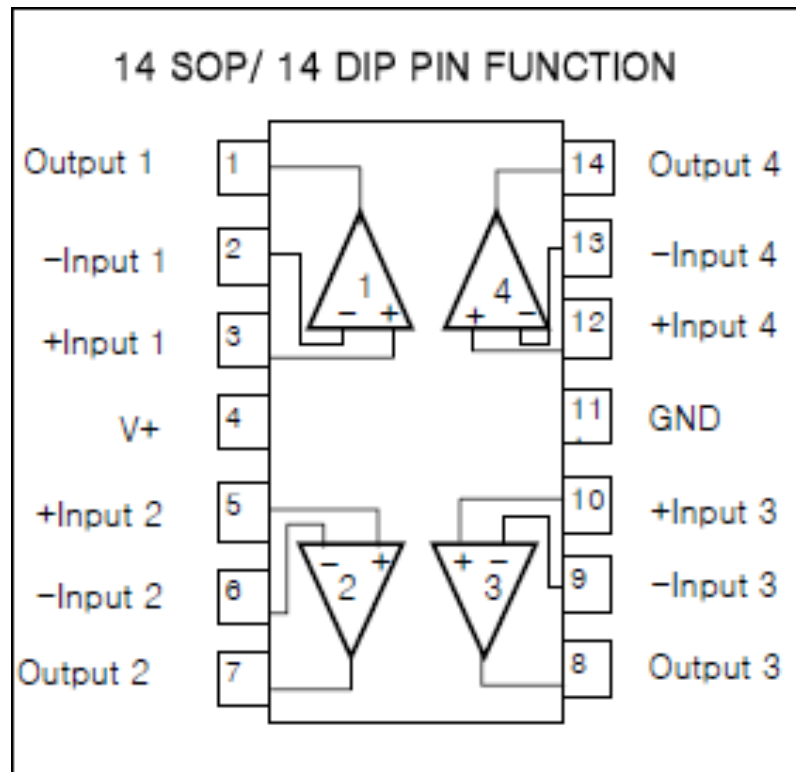
Voltage(mV) 100 150 250 500 1000 1500 2500 4500 5000

QUAD OPERATIONAL AMPLIFIERS

FEATURES

- Internally frequency compensated for unity gain
- Large DC voltage gain : 100dB
- Wide power supply range : 3V~32V(or $\pm 1.5\text{V}$ ~15V)
- Input common-mode voltage range includes ground
- Large output voltage swing : 0V DC to VCC-1.5V DC
- Power drain suitable for battery operation

ORDERING



ORDERING INFORMATION

Device	Package
LM324D	14 SOP
LM324N	14 DIP

QUAD

OPERATION AMPLIFIERS

LM324 is consists of four independent, high gain, internally frequency compensated operational amplifiers

which were designed specifically to operate from a single power supply over a wide voltage range.

Operation from split power supplies is also possible so long as the difference between the two supplies

is 3 volts to 32 volts voltage.

Application areas include transducer amplifier, DC gain blocks and all the conventional OP amp circuits

which now can be easily implemented in single power supply systems



DC MOTORS

FIG 5

DC motors are configured in many types and sizes, including brush less, servo, and gear motor types. A motor consists of a rotor and a permanent magnetic field stator. The magnetic field is maintained using either permanent magnets or electromagnetic windings. DC motors are most commonly used in variable speed and torque.

Motion and controls cover a wide range of components that in some way are used to generate and/or control motion. Areas within this category include bearings and bushings, clutches and brakes, controls and drives, drive components, encoders and resolves, Integrated motion control, limit switches, linear actuators, linear and rotary motion components, linear position sensing, motors (both AC and DC motors), orientation position sensing, pneumatics and pneumatic components, positioning stages, slides and guides, power transmission (mechanical), seals, slip rings, solenoids, springs.

Motors are the devices that provide the actual speed and torque in a drive system. This family includes AC motor types (single and multiphase motors, universal, servo motors, induction, synchronous, and gear motor) and DC

motors (brush less, servo motor, and gear motor) as well as linear, stepper and air motors, and motor contactors and starters.

In any electric motor, operation is based on simple electromagnetism. A current-carrying conductor generates a magnetic field; when this is then placed in an external magnetic field, it will experience a force proportional to the current in the conductor, and to the strength of the external magnetic field. As you are well aware of from playing with magnets as a kid, opposite (North and South) polarities attract, while like polarities (North and North, South and South) repel. The internal configuration of a DC motor is designed to harness the magnetic interaction between a current-carrying conductor and an external magnetic field to generate rotational motion.

Let's start by looking at a simple 2-pole DC electric motor (here red represents a magnet or winding with a "North" polarization, while green represents a magnet or winding with a "South" polarization).

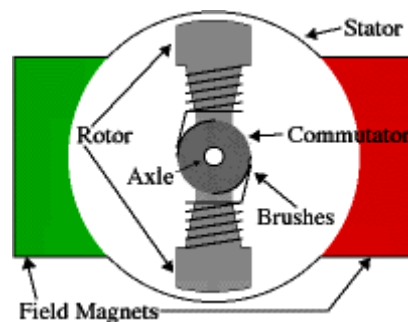


FIG 6

Every DC motor has six basic parts -- axle, rotor (a.k.a., armature), stator, commutator, field magnet(s), and brushes. In most common DC motors (and all that Beamers will see), the external magnetic field is produced by high-strength permanent magnets¹. The stator is the stationary part of the motor -- this includes the motor casing, as well as two or more permanent magnet pole pieces. The rotor (together with the axle and attached commutator) rotates with respect to the stator. The rotor consists of windings (generally on a core), the windings being electrically connected to the commutator. The above diagram shows a common motor layout -- with the rotor inside the stator (field) magnet

OVERVIEW :

If alcoholic person tries command on vehicle the alcoholic sensor determines the existing of alcohol and shut down the vehicle engine and sound alarm by which the nearby people will exchange the seat. Peoples are aware of situation by the help of "LCD screen" present in the vehicles and hence take required action. We can avoided any kind of loss of life by using this system. All equipments are totally tested and connected as required.

APPLICATIONS AND ADVANTAGES : The applications of this project are easily visible.

- The Alcohol detection with engine locking system can be implemented in any 4- wheelers.
- The Alcohol detection with engine locking system can help prevent accidents due to drunk driving.
- The Alcohol detection with engine locking system can be very helpful for police.
- The Alcohol detection with engine locking system prove automatic safety system for cars and other vehicles.

CONCLUSION :

We have given an incredibly capable way to deal and to develop a smart system for vehicles to diminish number of disasters caused in light of alcoholic driving. As the creating insight among people is that vehicle security is dynamically critical. Future degree of this structure is to control the setbacks caused due to alcohol use. This system improves the security of individual and in this manner giving the convincing progression in the vehicle business regarding decrease setbacks caused in light of driving.

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VEHICLE ACCIDENT PREVENTION SYSTEM USING EMBEDDED WITH ALCOHOL DETECTOR

by Vehicle Accident Prevention System Using Embedded Vehicle Accident
Prevention System Using Embedded

Submission date: 04-May-2022 12:14PM (UTC-0400)

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VEHICLE ACCIDENT PREVENTION SYSTEM USING EMBEDDED WITH ALCOHOL DETECTOR

Abstract:

The venture incorporates the plan of an Alcohol and a vehicle locking motor that involves a ultrasonic sensor and an Arduino UNO as a MCU (Master Control Unit). This framework persistently screens the degree of liquor inebriation and stop the motor in the event of liquor misuse. The model will likewise send a neighborhood message to the machine utilizing the SIM900A. This venture is a decent answer for forestall mishaps brought about by intoxicated driving.

Key Words: Arduino UNO, MQ-3 Sensor, Ultrasonic sensor, Buzzer, LED, SIM 900, DC

INTRODUCTION

Latest things show that auto collisions are brought about by plastered driving. The driver said that driving on open streets could be dangerous because of the chronic weakness of drivers who had drunk liquor. Vehicle size is surpassed. Today, Indian regulation precludes drivers from drinking liquor to abstain from paying fines for driving while inebriated. Anyway, it is hard for police and traffic police to watch out for automated drivers. This restricted limit of staff with handicaps prompts the transportation of refreshments. So we really want a framework that distinguishes liquor so it can work without with nothing to do and space.

In 2016, the Indian Ministry of Statistics announced a large number of auto collisions. Drivers prior to driving affected by liquor. A recent report by the World

Health Organization observed that around 50 to 60 percent of all car crashes were brought about by driving. Furthermore, a WHO report on street auto collisions was distributed

In 2013, 1.25 million vehicle passings were enrolled around the world, with little and medium-sized nations having the largest number of passings per 100,000 populace (24.1% and 18.4%), particularly drivers and transporters. At the BAC level of 0.4-0.6, drivers appear to be shocked/astonished or generally befuddled, and drivers are not encouraged to drive in such circumstances. Additionally, a BAC level of 0.7-0.8 makes a driver work harder intellectually, actually and inwardly. At this stage, the driver doesn't work and can't drive. The 0.2-0.3 degree of BAC stays inconsistent; however, the hidden powers remain. Consequently, such a framework is expected to decrease car crashes brought about by tanked driving.

LITERATURE SURVEY

The creator presented the procedure of identifying liquor utilizing GPS and GSM, yet this innovation is pricey, however can altogether diminish costs. The venture utilizes exceptionally practical perceptible signals and can bring individuals closer.

Wear a savvy cap to keep away from botches made by some unacceptable creator. Most importantly, utilizing a head protector on just two wheels is taboo. Second, microcontrollers are super based programming contrasted with financial signs that open storage spaces.

As per the creator, infrared-based wellbeing observing and sensors are utilized to identify liquor, yet it is difficult to stay away from phony problems in the framework, in light of the fact that now and again the adjustment of minutes is disturbing, however demolishes while utilizing the fundamental innovation.

To stay away from the issue of an alcoholic driver, the PIC16F877A microcontroller is an old and costly framework that keeps the Arduino and high-level microcontrollers from being utilized by a couple of individuals while utilizing the economy.

The MQ2 liquor sensor isn't accurate and permits misleading calls when MQ3 is utilized accurately

To defeat the carelessness of the protective cap and to comprehend the liquor, the creator thought of the possibility of a truly challenging framework and can utilize a pricey P89V57RD2 microcontroller, which can have just 2 wheels all at once.

This microcontroller is conservative as it very well may be found in any piece of the vehicle, which makes it more proficient and viable.

AIM OF THE PROJECT: -

Plan and execution of liquor and engine vehicles involving ultrasonic sensors and Arduino UNO as MCU (Master Control Unit).

Existing SYSTEM: -

The current framework is an outside framework. The driver focuses to the gadget and tracks down the beverage.

The fundamental justification for driving affected by liquor was the failure of the police to control every one of them.

EXISTING SYSTEM: -

The current framework is an outside framework. Assuming the driver discusses his gear and gets something to drink.

The fundamental justification behind plastered driving was that the police had zero control over every one of the vehicles, and each and every individual who was captured was effortlessly paid off.

So, we really want a sensible framework to control plastered drivers.

PROPOSED SYSTEM: -

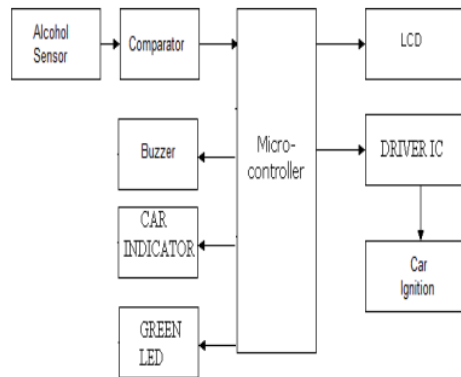
The proposed framework should give a productive motor to the vehicle. This is an inward framework that interfaces part of the vehicle burner

"Liquor sensor" to check assuming the driver has been drinking. Assuming the driver is affected by liquor, it is absurd to expect to drive a non-flammable vehicle and send instant messages to approved people through GSM.

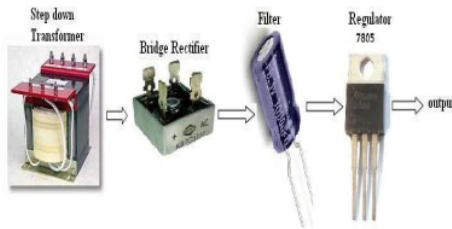
DESCRIPTION:

The primary motivation behind the undertaking is to "recognize inebriated drivers." Recently, there have been various mishaps brought about by tipsy driving by a driver and a driver. Along these lines, in pretty much every country on the planet, tipsy driving is the main source of mishaps. A vehicle internet searcher is intended to safeguard the security of those in the vehicle. This task ought to be placed in the vehicle.

BLOCK DIAGRAM:



POWER SUPPLY:



DESCRIPTION IN DETAILS:

The fundamental piece of this task is the "Liquor Sensor". Assuming an individual in the vehicle has been drinking, the sensor will recognize it. The shipper conveys this message to the IC. The result is similar to the microcontroller. The microcontroller is the core of this undertaking. With a full CPU cycle. The microcontroller conveys long sound to the sound and afterward the sound opens. By then, the transfer goes out. Subsequently, the vehicle was set ablaze.

APPLICATIONS AND ADVANTAGES:

Drug use in vehicles:

1) The "Liquor Detection Project" can be utilized to decide whether a driver has been savoring liquor an assortment of vehicles.

2) This venture can likewise be utilized to figure out how to drink liquor by workers in different organizations.

Advantages of Alcohol Detector project:

1) "Liquor discovery framework" gives a framework to the wellbeing of vehicles and different vehicles.

HARDWARE REQUIREMENT:

Microcontroller Arduino uno r3

Liquor

Examination of LM324

Signal

Driven

DC KMOTR

Companions IC

LCD (16X2)

SOFTWARE REQUIREMENT:

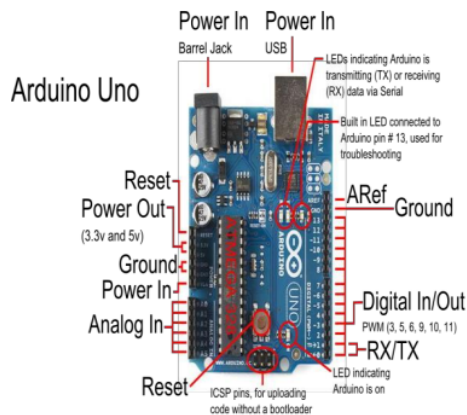
Laid out C.

Keil3 Microvision

Express PCB

ARDUINO UNO

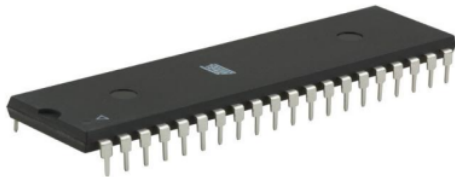
⁴ The Arduino UNO is a microcontroller board with 14 information sources/yields (6 of which can be utilized as PWM yields), 6 contributions to normal, 16 MHz earthenware resonator, USB association, power supply, ICSP head, and button rebuilding. It has all that you really want to help a ⁴ microcontroller; To get everything rolling, interface it to a PC that has a USB link or use it with an AC-to-DC connector.



MICROCONTROLLER:

The Intel 8051 microcontroller is one of the most famous microcontrollers being used today. Microcontrollers are utilized in computerized items

The Atmel AT89 series is a group of 8-cycle microcontrollers viable with Intel 8051 created by Atmel Corporation.



ALCOHOL SENSOR:

This liquor sensor is reasonable for deciding the volume of liquor in the air, as well as the typical alchemometer. It has high awareness and the capacity to rapidly respond. Liquor creation depends on liquor

Applications

Respiratory examination

Blood liquor testing

Alcohol Gas Sensor Features

He smells a ton of liquor and scents a little on the gas

The response is fast and clear

Life span and life span

Straightforward 5V DC circuit with yield

Working temperature: - 10 to 70 degrees



BUZZER:

The amplifier is a sound gadget.

It works in power or piezoelectric.

An unmistakable sign goes about as a sign.

The vibration of the metal plate makes a commotion.



LIQUID CRYSTAL DISPLAY (LCD):

LCD screens are a sort of show that is utilized in PC watches and PCs. The LCD show utilizes two sheets of polarizing materials and a fluid precious stone arrangement between them. Lightning strikes the completely clear, making it unimaginable for light to go through it. Thusly, every Christian resembles an obstruction and makes light pass through or stop light.

The gem water can be constrained by the voltage utilized and the light can be switched off or off.

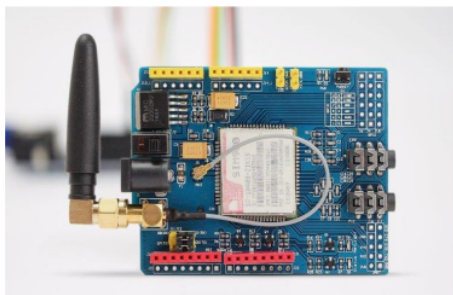
The LCD show can show a picture on the off chance that you can precisely control where the light voyages and the frequency (variety). The backdrop illumination enlightens the LCD screen. Different advancements have made it entirely conceivable to decrease the time expected to return the LCD to the LCD screen.



GSM Modem (SIM900):

A GSM modem is an extraordinary sort of modem that acknowledges SIM cards and works for cell phone clients to enlist. A GSM modem can be committed to God. A modem gadget with a sequential, USB, or Bluetooth association can be a mobile phone

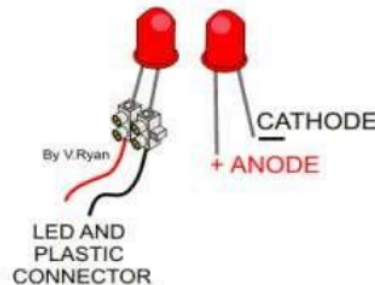
GSM model capacity. The GSM modem presently shows the reasonable scope of the gadget. Send and get SMS through modem. In a given framework, the GSM SIM 900 module is utilized to send messages to the cell phone in case of a mishap.



LIGHT EMITTING DIODE (LED):

A light producing diode is a semiconductor diode that creates an exceptional light when

coordinated toward the front of a pn intersection, as is many times the situation with LED circuits. The impact is electroluminescence



While communicating something specific as 1 digit, the data shipped off the beneficiary concurs with the LED light that shows the data got at the same time when we send 8 when the LED data diminishes.

APPLICATIONS AND ADVANTAGES:

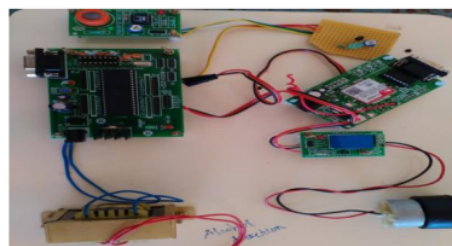
The liquor show and motor shut-off framework can be made on 4 wheels.

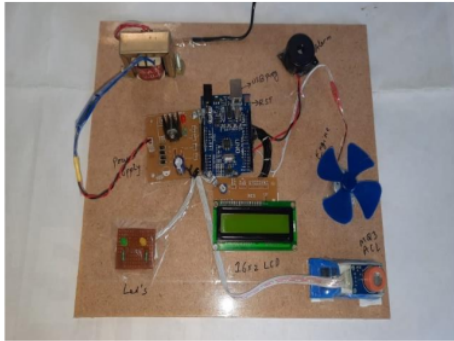
Monitoring liquor and motor closure frameworks can assist with forestalling mishaps brought about by smashed driving.

Knowing the liquor and motor closure framework will be extremely useful for the police.

Exhibit of liquor and motor locking frameworks mirrors the security frameworks of vehicles and different vehicles.

DEVICE:





CONCLUSION:

We have thought of an interesting method for fostering a shrewd vehicle framework to decrease the quantity of liquor related mishaps. According to a human perspective, vehicle security is vital. Going into what's to come is tied in with controlling the damages of liquor. The framework is intended to guarantee individual security and hence give a declaration to the advancement of the car business to decrease driving.

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VEHICLE ACCIDENT PREVENTION SYSTEM USING EMBEDDED WITH ALCOHOL DETECTOR

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