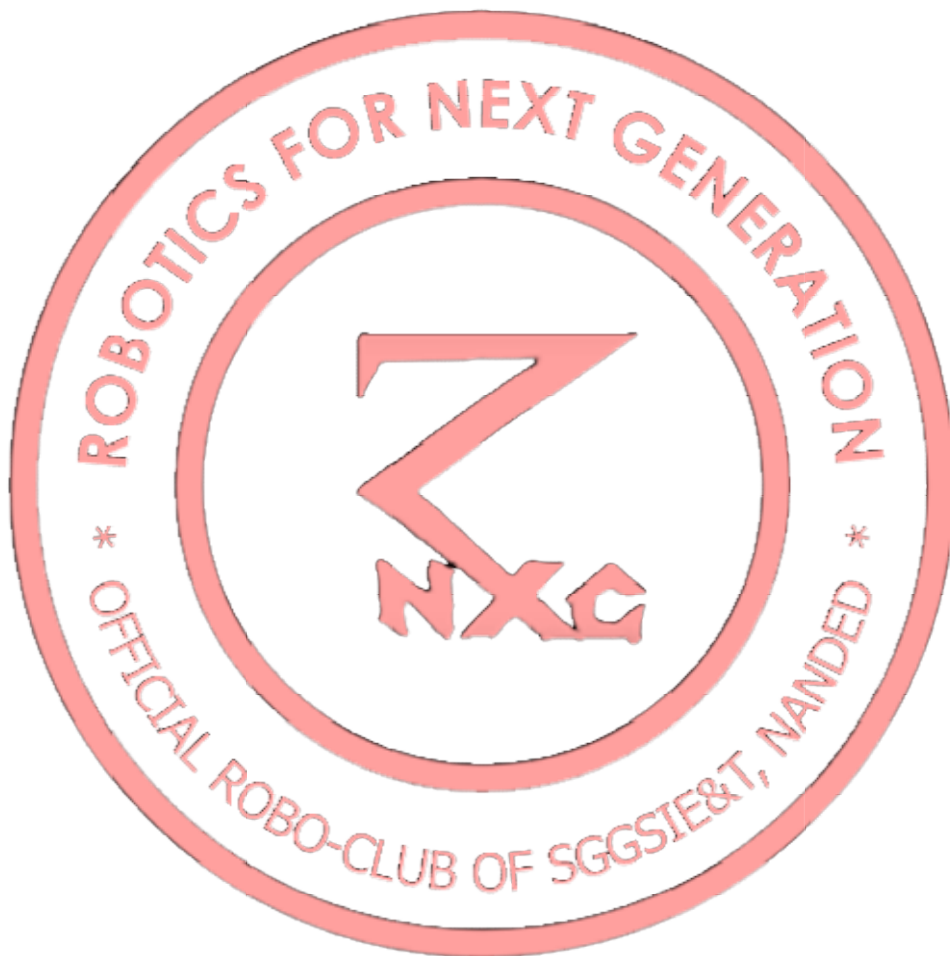# RNXG LAB REPORT

A report on Alcohol Detection Device Using Arduino To Prevent Accident

Project Created By:-

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Problem Statement & Need Statement :

Predictive warning for alcohol detection causing drink *and drive cases.*

Basically, the purpose of this project is to develop an prototype. To prevent the accident by "Alcohol detector device" in an effort to reduce the drink an drive cases based on driving under the influence alcohol.
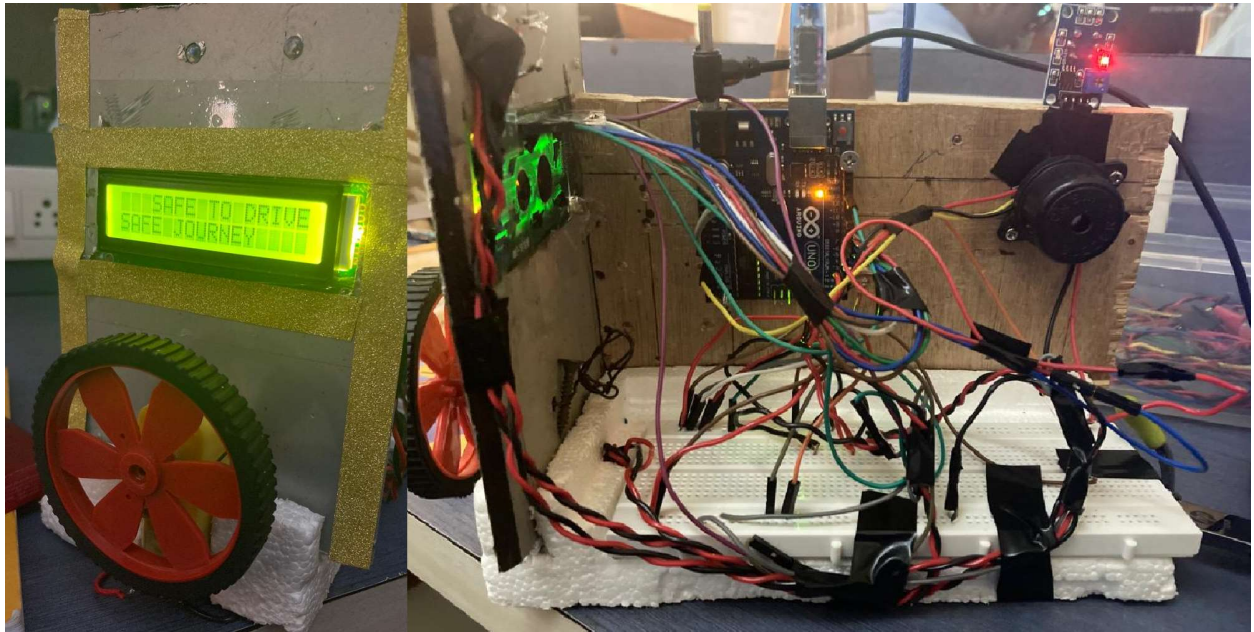
In Public transport it is need to test driver's health and mental condition that all passengers has to be safe and it will enforcement can be effective in the drink and drive cases.

Components

1. Arduino Uno R3
2. DC Motor Alcohol Sensor
3. LCD Display with Potentiometer connected
4. Buzzer
5. Breadboard
6. Resistor (5k ohms)

Schematic Diagram
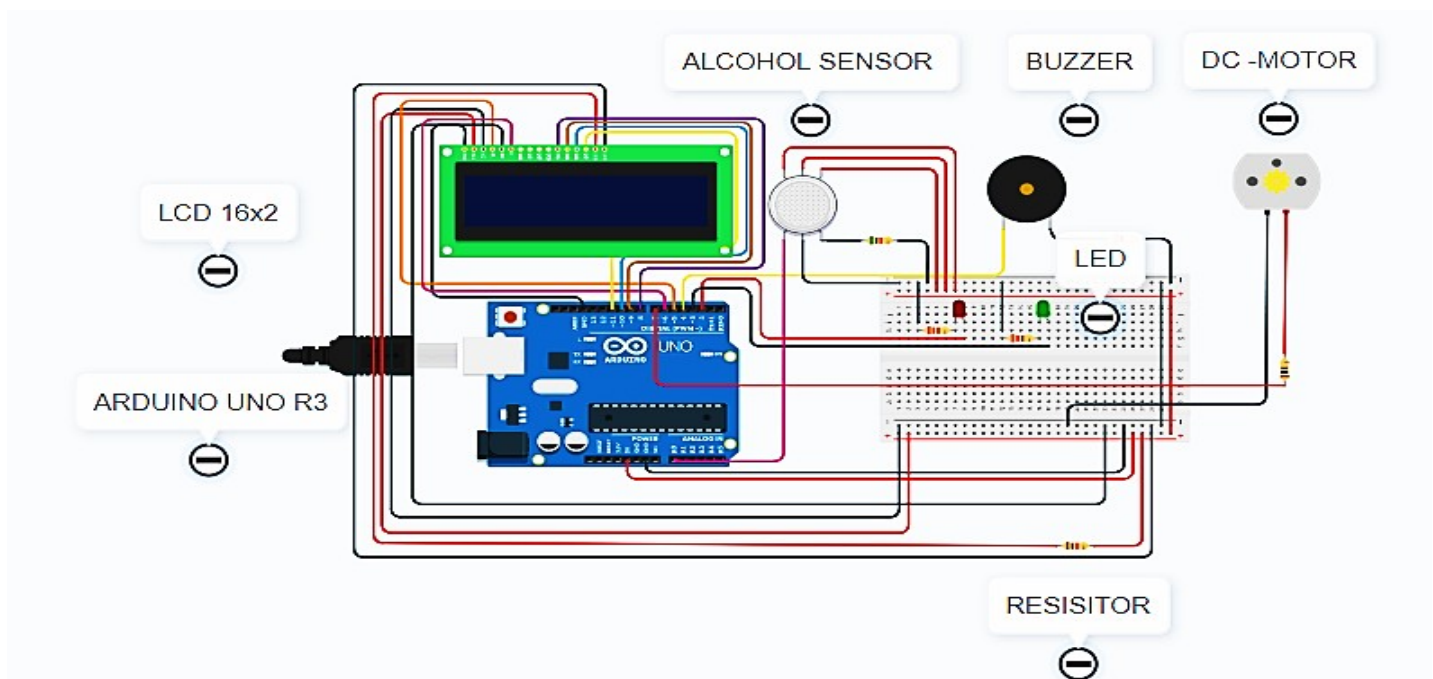
Working Principle :

Working principal of the alcohol detection device using arduino as follows , basically we are using alcohol detection sensor for checking driver is drunk or not we are defining the threshold value in our arduino program for alcohol sensor to detect the alcohol concentration , if alcohol concentration is beyond the threshold limit alcohol sensor detect and sends low input to engine as a result engine will slowly stop as well as it sends the high signal to the buzzer and red led that we are using in project and as a result future accidents are avoided

Components Specification

Breadboard

A breadboard, or protoboard, is a construction base for prototyping electronics. Originally the word referred to a literal breadboard, a polished piece of wood used when slicing bread.[1] In the 1970s the solderless breadboard (a.k.a. plugboard, a terminal array board) became available and nowadays the term "breadboard" is commonly used to refer to these.

Because the solderless breadboard does not require soldering, it is reusable. This makes it easy to use for creating temporary prototypes and experimenting with circuit design. For this reason, solderless breadboards are also popular with students and in technological education. Older breadboard types did not have this property. A stripboard (Veroboard) and similar prototyping printed circuit boards, which are used to build semi-permanent soldered prototypes or one-offs, cannot easily be reused. A variety of electronic systems may be prototyped by using breadboards, from small analog and digital circuits to complete central processing units (CPUs)

Compared to more permanent circuit connection methods, modern breadboards have high parasitic capacitance, relatively high resistance, and less reliable connections, which are subject to jostle and physical degradation. Signaling is limited to about 10 MHz, and not everything

works properly even well below that frequency.

LCD

A **liquid-crystal display (LCD)** is a flat-panel display or another electronically modulated optical device that uses the light-modulating properties of liquid crystals combined with polarizers. Liquid crystals do not emit light directly, instead of using a backlight or reflector to produce images in color or monochrome. LCDs are available to display arbitrary images (as in a general-purpose computer display) or fixed images with low information content, which can be displayed or hidden. For instance: preset words, digits, and seven-segment displays, as in a digital clock, are all good examples of devices with these displays. They use the same basic technology, except that arbitrary images are made from a matrix of small pixels, while other displays have larger elements. LCDs can either be normally on (positive) or off (negative), depending on the polarizer arrangement. For example, a character positive LCD with a backlight will have black lettering on a background that is the color of the backlight, and a character negative LCD will have a black background with the letters being of the same color as the backlight. Optical filters are added to white on blue LCDs to give them their characteristic appearance.

Arduino UNO:-

Arduino is an open-source platform used for building electronics projects. Arduino consists of both a physical programmable circuit board (often referred to as a microcontroller) and a piece of software, or IDE (Integrated Development Environment) that runs on your computer, used to write and upload computer code to the physical board.

The Arduino platform has become quite popular with people just starting with electronics, and for good reason. Unlike most previous programmable circuit boards, the Arduino does not need a separate piece of hardware (called a programmer) to load new code onto the board — you can simply use a USB cable. Additionally, the Arduino IDE uses a simplified version of C++, making it easier to learn to program. Finally, Arduino provides a standard form factor that breaks out the functions of the micro-controller into a more accessible package.

The Uno is one of the more popular boards in the Arduino family and a great choice for beginners. The Arduino hardware and software were designed for artists, designers, hobbyists, hackers, newbies, and anyone interested in creating interactive objects or environments. Arduino can interact with buttons, LEDs, motors, speakers, GPS units, cameras, the internet, and even your smartphone or your TV! This flexibility combined with the fact that the Arduino software is free, the hardware boards are pretty cheap, and both the software and hardware are easy to learn has led to a large community of users who have contributed code and released instructions for **a huge** variety of Arduino-based projects.

Buzzer:-

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

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Two types of buzzers are commonly available. The one shown here is a simple buzzer which when powered will make a Continuous Beeeeeep. 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 customized 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 the required time and required interval.

Circuit Layout
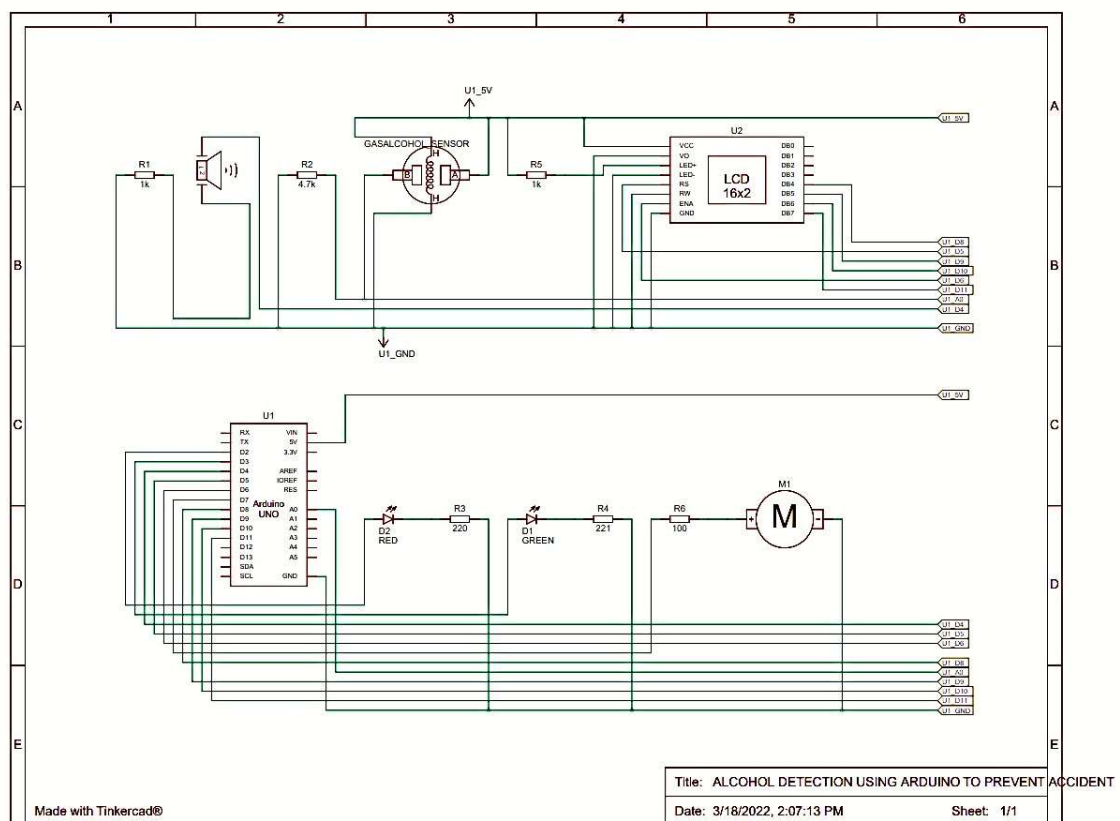
Applications

1. In public transports such as buses, etc.
2. In private vehicles such as cars.
3. We can use this machine as breathalyzer in public
4. Places where drinking is not allowed

Advantages

1) Portable
2) Efficient
3) Low Cost
4) Futuristic
5) Low Power Consumption

Disadvantages

1. Range detection at larger distances.
2. May get damaged by hitting or any other blow.
3. If any of the sensors would not work properly it will affect the functionality.

Future Scope

1) Detection of alcohol in public places.
2) Monitoring the data of alcoholic car.
3) Strictly avoid drink and driving scenes.
4) We can use this device as breathalyzer.

References

1. Tinkercad circuit designing suite.

2. Research article from nova journal of engineering and applied science.

Technology and Software used

1) Tinkercad

2) Arduino IDE

3) Proteus 8.0