

SPEED REGULATION OF VEHICLE AND IMPLEMENTATION OF SAFETY AND PENALTY SYSTEM AGAINST DRUNKEN DRIVING

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Abstract— This Paper represents our final year project in which this project helps to reduce the accident and loss of property due to drunken driving. We have use Microcontroller attached to an alcohol sensor which detect the presence of alcohol in the breath of a person driving the vehicle the speed of vehicle is reduced according to the consumption of alcohol and if the alcohol content increases the maximum threshold value then engine of the vehicle automatically turned off and if the driver doing this mistake several times then their driving license automatically canceled.

Keywords—AT89c52 microcontroller, MQ3 Alcohol sensor, GSM module, ADC, BJT, LCD, IC555, DC motor.

I. INTRODUCTION

In today's era, nearly 5 lakh road accidents occur within a year which results in 1.5 lakh death. Out of this 52-54 % are caused by drunken driving [6]. Drunken drivers will not be in stable condition and so the rash driving is the inconvenience for other road users and also a question of life and death for the drunken driver and for others. Government is taking several steps introducing several rules and restrictions in managing the traffic system, but cannot play with the mindset of drivers and is unable to reach on a particular goal. Almost all the countries in the world are facing major accidents because of drunk driving. These accidents can be reduced by using our proposed system and suitable punishment will be given by IPC (Indian Penal Code) section 185[5].

According to IPC, any person who in his/her blood has alcohol exceeding 30 mg. per 100 ml of blood detected in a breath, an analyzer is said to be driving under influence of alcohol. With the implementation of our system appropriate penalty will be given to drunken drivers and protection is provided. The system detects the alcohol level present in the air inside the vehicle. At a low level of alcohol content the speed of the vehicle is reduced while at a high level it locks the engine immediately and at the same time sends SMS along with the location to three pre-selected contacts. If this task is performed many times then the driving license of the driver is

automatically canceled. Hence the system will reduce the number of road accidents and casualties due to drunk driving in the future.

With the implementation of such a system results in-

- Reduction in the number of crashes involving drinking and driving.
- Reduction in fatalities resulting from crashes.
- Reduction in the proportion of drivers with an illegal BAC (Blood Alcohol Concentration).
- A number of drivers/riders agreeing not to drink & drive.
- Increase in driver perception of stronger enforcement of illegal alcohol laws.
- Increase in level of community support for stronger penalties for drinking-driving behavior.

II. HARDWARE MODULE

The embedded system uses AT89c52 microcontroller. The main function modules are GSM module, an Alcohol sensor module, DC motor, 16*2 LCD display, driver circuit

III. LITERATURE SURVEY

Till now, the various projects have been developed to provide safety to the drunken driver such as "Engine Locking System"[1], "Warning system"[4].

In the above Project only Engine Locking system is implemented but in our Project, we are implementing additional features which monitor the action of a driver and maintains a database of a number of drinking attempt made. Based upon the threshold level it issues a notice to the driver and if drinking attempts increases then the driver license is automatically expired .this policy exist in some country like North Korea but with a failure of other traffic rules. The successful implementation of this policy can be only obtained

when frequency of regular police check up increases upon

S.NO.	COMPONENTS	RATING	QUANTITY
1	Transformer	12V, 1A	1
2	Microcontroller	At89c52	1
3	Motor	12v DC	1
4	Buzzer	5v	1
5	GSM module	5v	1
6	LCD	16x2	1
7	Power BJT	BC3055(PNP)	1
8	Transistors	BC558(PNP)	4
9	Voltage regulator	IC 7805	2
10	Oscillator	IC 555 1khz	1
11	ADC	0809	1
12	Diodes	IN4001	8
13	Oscillator	11.0592MHz	1
14	MQ-3	5v,150mA	1
15	Reset key		1
16	Capacitor	1000µF	1
17	Capacitor	100µF	3
18	Ceramic capacitor	104pF	3
19	Ceramic capacitor	33pF	2
20	Variable resistors	0-100kΩ	5
21	Resistors	10kΩ	25
22	Connecting wires		As required
23	Male & Female connectors		1

disqualification of driving license.

But looking at fatality caused due drinking it becomes really important to design an automatic system which can penalize the culprit. These systems can be easily developed with the current technical invention of an embedded system. The various sensors now a can be interfaced with a microcontroller and easy programming language such as embedded C can be used to program microcontroller.

IV.COMONENT LIST

V. FUNCTIONALITY OF PROJECT

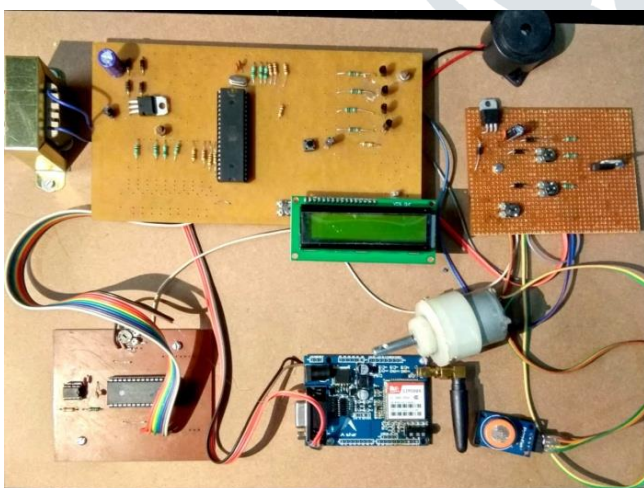


Fig.1 working model

In this project, we take the AC supply i.e. 240 volts then convert this 240 volt Ac supply into 12V AC supply by using a step-down transformer. Now we convert 12V AC into 12V pure DC by using a bridge rectifier and a filter capacitor to remove the ripple and to obtain the pure DC supply.

Now this pure 12V DC supply is converted into 5V DC supply by using 7805 IC and this supply is given to microcontroller and motor drive circuit. Pin 40 is connected to a high voltage (5V) and pin 20 is grounded.

MQ3 Alcohol sensor detects the concentration of alcohol present and produces an analog signal corresponding to an alcohol concentration and this analog signal is converted into 8-bit digital data using ADC.

ADC required 1 KHz frequency which is generated by IC-555 timer now this digital output is given to the microcontroller at PORT 0.

The clock cycle is produced by an external oscillator and given to microcontroller at pin 18 and 19. The standard frequency required is 11.0592 Mhz.

LCD is connected to PORT 1 and 3 controlling pin namely RS (register select), R/W (read/write) and EN (enable) to a microcontroller.

The 3 pins which control driver circuit of a motor are 15, 16 and 17. These pins give low signal based on the concentration of alcohol detected.

The GSM module is connected to the microcontroller through pins 10(transmitter) and 11(receiver).

Buzzer gets activated through pin 14 of port 3.

Microcontroller compares the data received from ADC and compares with the reference value if received value is greater than the reference value the GSM, Buzzer, LCD, and motor drive circuit gets activated.

VI. WORKING FLOW CHART

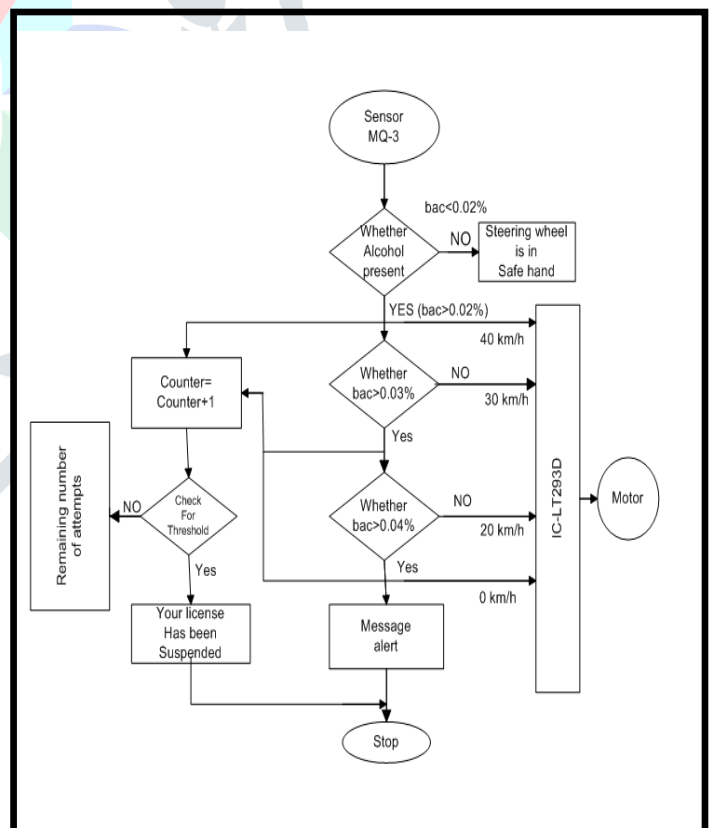


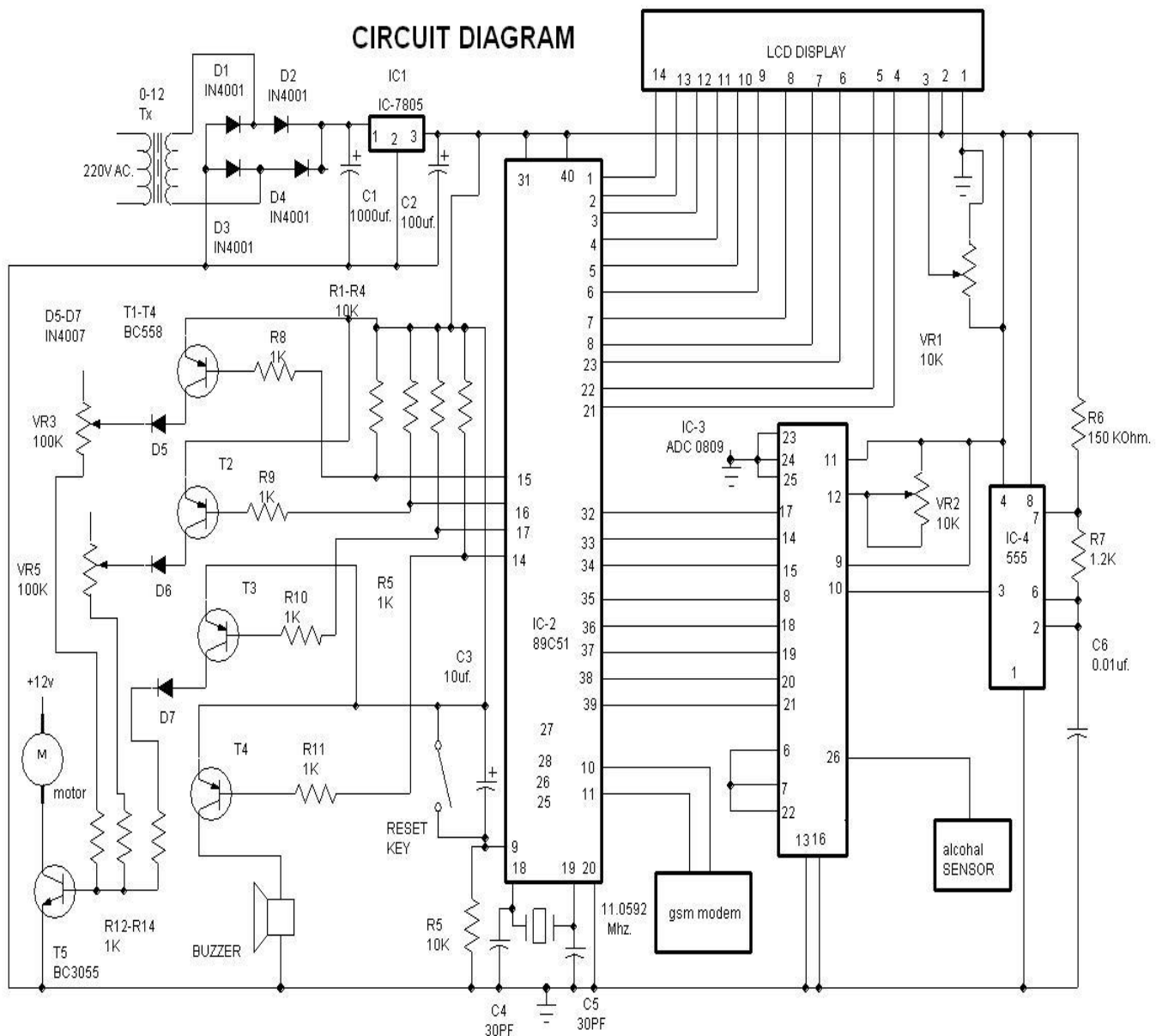
Fig.2 flow chart

According to fig.2, the digital value provided by ADC is compared to preset values stored in RAM. If obtained value is greater than preset value say, 50 < Rf < 75 then pin 15 is active and speed of a vehicle is maintained below 40 Km/h and a message is sent using GSM module to registered member. If

the upper limit of the concentration is crossed than vehicle ignition is turned off and the current situation of a vehicle is informed to family members. However, if the vehicle is driven

more than 3 times within a month under the influence of alcohol than the license of a driver is suspended for 1 month.

VII. CIRCUIT DIAGRAM



VIII. RESULT

When a drunk person tries to drive the vehicle then alcohol sensor detects the presence of alcohol in the breath of a person driving the vehicle then according to the concentration of alcohol speed of the vehicle is reduced. If the content of alcohol is more than the maximum threshold value then the engine of the vehicle is automatically turn off. If the driver doing this mistake several times then their driving license automatically cancel.

IX. CONCLUSION

An effective solution is provided to reduce road accidents due to drunken driving. This is done by using a microcontroller, alcohol sensor dc motor, LCD display, GSM and motor driver circuit.

The sensor used in the project is very accurate and can be configured according to the requirements. Therefore by using this system on a vehicle any kind of loss of life or damage to property can be avoided.

X. FUTURE SCOPE

1. This project can be extended for multiple users.
2. With database i.e., if a person drinks less than set threshold attempts than his attempts should be renewed.
3. Modified using GPS
4. Extended to inform the police, Hospital therefore further surveillance can be done so that we can observe the user activity.

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