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Ignition Interlock by Alcohol Breath Analyser using GPS and GSM

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Abstract-- Now a day's, every system is automated in order to face new challenges. In the present days automated system have less manual operations, flexibility, reliability, and accurate. Due to this demand every field prefers automated control system. Especially in the field of electronics automated systems are giving good performance. The "Alcohol detector" itself indicates that whenever there is any alcoholic content has been detected using alcoholic sensor MQ-03 so that it will indicate through the buzzer alarm and also the motors of the vehicle automatically turn OFF. This work makes use of the alcoholic sensor that finds alcoholic content and fed as in put to the microcontroller.

I. INTRODUCTION

Road accidents and collisions occur frequently. every hour,4**0** people under the age of 25 die in road accidents. most of the city accidents are due to carelessness of driver but outside the city, accidents occur due to the drunken driving only. due to health level condition accident may occur. i.eif there is a less pulse level then person may lead to unconscious stage. loss of person is mainly due to heart attack. drunken driving only so this can be reduced by using different techniques. Alcohol detection method, heart rate monitoring system, human level identification methods are used to minimize the level of an accident. Apart from this due to driver vigilance within a fraction of second accident may occur. Most of the accidents occur, if person attends a phone call while driving.

This presents an innovative way of protecting automobiles from drunken drivers for safeguarding them. The system permits localization of the automobile and transmitting the position to the owner on his mobile phone as a short message (SMS) at his request.

The system can be interconnected with the car alarm system and alert the owner on his mobile phone. This tracking system is composed of a GPS receiver, PIC Microcontroller and a GSM Modem. GPS Receiver gets the location information from satellites in the form of latitude and longitude. The PIC Microcontroller processes this information and this processed information is sent to the user/owner using GSM modem.

The presented application is a low cost solution for automobile position and status, very useful in case of monitoring adolescent drivers by their parents as well as in car tracking system applications. The microcontroller gets the information regarding the alcohol through the alcohol sensor and alerts about the condition being sensed using Buzzer and also automatically the motors of the vehicle turns OFF using relay switch. By this way we can take the prevention steps before occur the major accidents and we can avoid the human losses and financial losses.

A. Block diagram

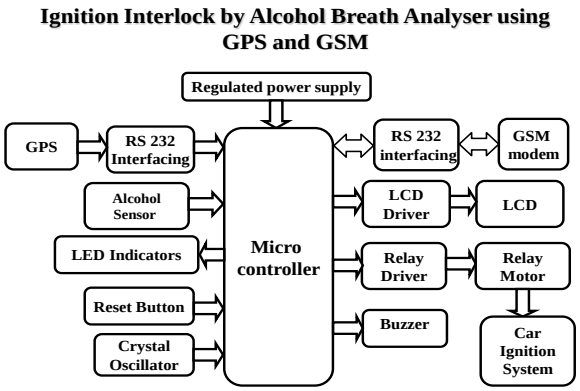


Figure 1: Ignition Interlock by Alcohol Breath Analyser Using GPS and GSM

B. Micro controller

Introduction to Microcontrollers: Circumstances which finds ourselves in today in the field of microcontrollers had their beginnings in the development of technology of integrated circuits. This development has made it possible to store hundreds of thousands of transistors into one chip. That was a prerequisite for production of microprocessors, and the first computers were made by adding external peripherals such as memory, input-output lines, timers and other.

C. Features of PIC 18F452:

a. Power Supply

PIC18F452 can operate with a supply voltage of 4.2V to 5.5V at the full speed of 40MHz. The lower power version, PIC18LF452, can operate from 2.0 to 5.5 volts. At lower voltages the maximum clock frequency is 4MHz, which rises to 40MHz at 4.2V. The RAM data retention voltage is specified as 1.5V and will be lost if the power supply voltage is lowered below this value. In practice, most microcontroller-based systems are operated with a single þ5V supply derived from a suitable voltage regulator.

b. Reset

The reset action puts the microcontroller into a known state. Resetting a PIC18F microcontroller starts execution of the program from address 0000H of the program memory. The microcontroller can be reset during one of the following operations:

D. Regulated Power Supply

a. Introduction

Power supply is a supply of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to

others. A power supply may include a power distribution system as well as primary or secondary sources of energy.

b. Transformers

A transformer is a device that transfers electrical energy from one circuit to another through inductively coupled conductors without changing its frequency. A varying current in the first or primary winding creates a varying magnetic flux in the transformer's core, and thus a varying magneticfield through the secondary winding.

This varying magnetic field induces a varying electromotive force (EMF) or "voltage" in the secondary winding. This effect is called mutual induction.

c. Battery power supply

A battery is a type of linear power supply that offers benefits that traditional line-operated power supplies lack: mobility, portability and reliability. A battery consists of multiple electrochemical cells connected to provide the voltage desired.

d. Rectifier

A rectifier is an electrical device that converts alternating current (AC) to direct current (DC), a process known as rectification. Rectifiers have many uses including as components of power supplies and as detectors of radio signals. Rectifiers may be made of solid-state diodes, vacuum tube diodes, mercury arc valves, and other components.

e. Filters

Electronic filters are electronic circuits, which perform signal-processing functions, specifically to remove unwanted frequency components from the signal, to enhance wanted ones.

f. Capacitor

The **Capacitor** or sometimes referred to as a Condenser is a passive device, and one which stores energy in the form of an electrostatic field which produces a potential (static voltage) across its plates. In its basic form a capacitor consists of two parallel conductive plates that are not connected but are electrically separated either by air or by an insulating material called the Dielectric. When a voltage is applied to these plates, a current flows charging up the plates with electrons giving one plate a positive charge and the other plate an equal and opposite negative charge this flow of electrons to the plates is known as the Charging Current and continues to flow until the voltage across the plates (and hence the capacitor) is equal to the applied voltage Vcc. At this point the capacitor is said to be fully charged.

g. Voltage Regulator

A voltage regulator (also called a 'regulator') with only three terminals appears to be a simple device, but it is in fact a very complex integrated circuit. It converts a varying input voltage into a constant 'regulated' output voltage. Voltage Regulators are available in a variety of outputs like 5V, 6V, 9V, 12V and 15V. The LM78XX series of voltage regulators are designed for positive input

h. Resistors

A resistor is a two-terminal electronic component that produces a voltage across its terminals that is proportional to the electric current passing through it in accordance with Ohm's law:

$$V = IR$$

Resistors can be made to control the flow of current, to work as Voltage dividers, to dissipate power and it can shape electrical waves when used in combination of other components. Basic unit is ohms.

E. GPS MODULE (Global Positioning System)

The Global Positioning System (GPS) is a burgeoning technology, which provides unequalled accuracy and flexibility of positioning for navigation, surveying and GIS data capture. The GPS NAVSTAR (Navigation Satellite timing and Ranging Global Positioning System) is a satellite-based navigation, timing and positioning system. The GPS provides continuous three-dimensional positioning 24 hrs a day throughout the world. The technology seems to be beneficiary to the GPS user community in terms of obtaining accurate data up to about100 meters for navigation, meter-level for mapping, and down to millimeter level for geodetic positioning. The GPS technology has tremendous amount of applications in GIS data collection, surveying, and mapping.

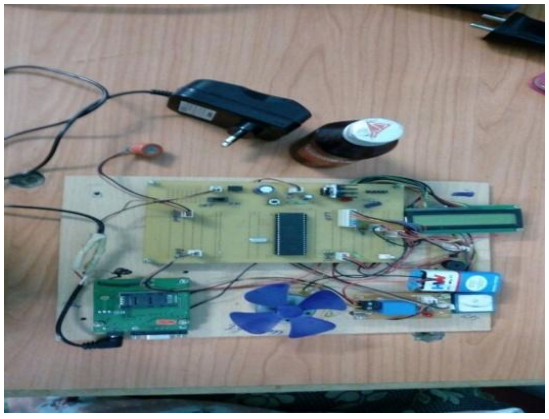
F. GSM (Global System for Mobile Communication)

GSM, which stands for Global System for Mobile communications, reigns (important) as the world's most widely used cell phone technology. Cell phones use a cell phone service carrier's GSM network by searching for cell phone towers in the nearby area. Global system for mobile communication (GSM) is a globally accepted standard for digital cellular communication.

G. PIC Compiler:

PIC compiler is software used where the machine language code is written and compiled. After compilation, the machine source code is converted into hex code which is to be dumped into the microcontroller for further processing. PIC compiler also supports C language code.

It's important that you know C language for microcontroller which is commonly known as Embedded C. As we are going to use PIC Compiler, hence we also call it PIC C. The PCB, PCM, and PCH are separate compilers. PCB is for 12-bit opcodes, PCM is for 14-bitopcodes, and PCH is for 16-bit opcode PIC microcontrollers. Due to many similarities, all three compilers are covered in this reference manual. Features and limitations that apply to only specific microcontrollers are indicated within. These compilers are specifically designed to meet the unique needs of the PIC microcontroller. This allows developers to quickly design applications software in a more readable, high-level language. When compared to a more traditional C compiler, PCB, PCM, and PCH have some limitations. As an example of the limitations, function recursion is not allowed. To add header file for controller you are using, otherwise you will not be able to access registers related to peripherals.



#include <16F877A.h> // header file for PIC 16F877A//

This is the final model of the Ignition Interlock by Breath Alcoholic Analyser.

II. RESULT

The "Ignition Interlock by Alcohol Breath Analyser using GPS and GSM " was designed such that the location and the position of the vehicle is transmitted to the owner on his mobile phone as a short message (SMS) at his request using GPS and GSM modems. The microcontroller gets the information regarding the alcohol through the alcohol sensor and alerts about the condition being sensed using Buzzer and also automatically the motors of the vehicle turns OFF using relay switch.

III. CONCLUSION

Integrating features of all the hardware components used have been developed in it. Presence of every module has been reasoned out and placed carefully, thus contributing to the best working of the unit. Secondly, using highly advanced IC's with the help of growing technology, this has been successfully implemented.

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