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Smart Bus Monitoring and Controlling By Using GSM

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Abstract: **- The main objective of this project is to control the accidents. Here in this project the system consists of five modules namely seat belt sensor (IR), alcohol sensor, vibration sensor, IR sensor and GSM modem. The seat belt sensor (IR) is combined with an ignition locking switch, which disables the starting mechanism of the bus unless the driver wears the seat belt. The alcohol sensor is used in breath analyser unit, which is used to sense whether the driver consumed alcohol or not, if he consumes alcohol the controller directly send the alert message to the owner through GSM modem and automatically buzzer will be ON. IR sensors are used for counting the person boards or leaves from the bus. Vibration sensor is used to detect the accident occurred or not, suppose if any accident occurred the ARM controller send message to the bus owner as "Accident occurred, no of persons inside the bus=00" through GSM modem. If the driver gets the incoming call while he is in driving then GSM modem of our project used to send the message to specific received call as "that the person you are trying call is in driving" . By using all these applications we can provide the safe journey.**

Keywords: **ARM (LPC2148), LCD, Alcoholsensor, Vibration sensor, IR sensor, GSM**

I. INTRODUCTION

The current transit system in World has not kept pace with more modernized systems where real-time transit scheduling and traffic data are accessible to the general public. It is not rare to encounter frustrations when buses are not arriving on pre-made schedules due to real-time uncertainties. On the other hand, emerging personal communication and computing technologies, such as Smartphone, are fast growing popularity worldwide with hundreds of millions users. To resolve the imbalance between the current system and the ever-evolving technology, it is innovative to enable effective communication among the transit control centre, buses, bus stops and passengers.

The Smart Bus System is a system which applies available communication technologies (e.g. GSM,) to connect transit authority and passengers. It provides the public with an easy and comfortable way of travelling.This system would be inclusive to all users including people with special needs. It helps us public from accidents by sending a message to department head. It automatically checks the driver whether he is consuming alcohol or not and he must wear seatbelt to start engine and it also counts the person getting into the bus as well as get out of bus and it displays all the information on LCD.

A breath analysing apparatusforuse in an automobile ignition locking system is described here. The present invention relates generally to breath analysing devices and more specifically to an improved breath analysing device used in an automobile ignition lock system which prevents a bus from starting when the driver is intoxicated and which requires periodic rolling retests while the bus is being operated. The breath analysing device is combined with an ignition locking system which disables the starting mechanisms of the bus unless a satisfactory sample is blown into the breath analyser device. Alcohol sensor is used in breath analyser unit which is connected with ADC board converting analog to Digital data. Microcontroller used here is used to measure the level of alcohol content intake by driver and take the necessary action.

Vibration sensor is used in our project if any accident occur with the help of GSM modem, it directly send message to user. Mobile phone using while driving is common but controversial. Being distracted while operating a motor vehicle has been shown to increase the risk of accident. The key holder which is used to start our vehicle. The section contains GSM modem switch, motor and buzzer.

GSM modem of our project used to send message to specific received call that "the person you are trying call is in driving call after some time" and buzzer will not ON to indicate receiving call. GSM also has to send the content of alcohol in PPM level to the pre-configured number. IR sensor

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is used for counting the persons incoming and outgoing from the bus. To avoid using of mobile while driving is the main objective of our project which leads to control the accidents.

In existing method, we can't provide safe journey to the travellers and no information is known to the bus owner. So implementing in the proposed system as following

II PROPOSED SYSTEM

In the proposed system the system provides a fully automated monitoring and controlling the vehicle. The system consists of ARM7 controller, seat belt (IR) sensor, IR sensor (counting of persons), alcohol sensor, vibration sensor, GSM module, LCD, DC gear motor and buzzer. The seat belt (IR) sensor is combined with an ignition locking switch, which disables the starting mechanism of the bus unless the driver wears the seat belt. If he does not wear the seat belt the motor does not start. Then the alcohol sensor is used to sense that the driver was drunk or not .If the driver consumed alcohol ARM controller send the message to the owner as "driver consumed alcohol "through GSM modem and switch on the buzzer it alert the passengers. The IR sensor is used in this project mainly for the person incoming and outgoing from the bus specially for attendance counting. Vibration sensor is used to detect that the accident occur or not. If any accident occurred the ARM controller send the message as "Accident occurred and how many persons are in the bus =00" and switch on the buzzer through GSM modem. Then the main version of this project is to avoid mobile phone while driving. If the driver gets the incoming call while he is in driving then the GSM modem is used to send the message to specific received call" that the person you are trying call is in driving". So this is the main application to avoid accidents and reach safely to the destination.

A) Block diagram

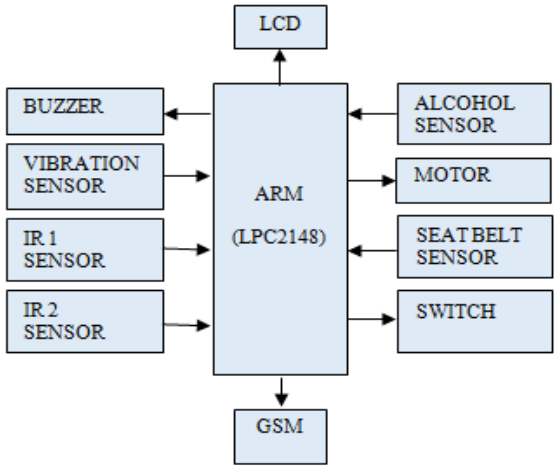

Fig1: Block diagram of smart bus

The above figure 1 shows the block diagram of smart bus monitoring and controlling by using GSM. We are using LPC2148 which is an advanced RISC machine. It is a 32 bit controller which follows von Neumann architecture.

III TRANSMITTING SECTION:

In previously we observe the driver usually mistakes like alcohol consumption, using mobile phone while driving it may occur accidents, so by this condition we may lose many more lives. And if any accident occurs nothing information is send to anyone and immediate treatment is not done. The disadvantage of existing method is over come in transmitting and receiver section as follows,

In this transmitting section consist of ARM7, GSM, vibration sensor, seatbelt sensor, alcohol sensor, motor, buzzer, LCD and IR sensor.Arm7 mainly used for monitoring and controlling the sensor for providing safe journey. The seatbelt sensor is used to sense whether the driver is wearing seatbelt or not through the IR sensor interfacing. Motor is to be started until seatbelt is wear. Thus the total information of the seatbelt sensor is displayed on LCD. Alcohol sensor is mainly used to detect whether the driver consumed alcohol or not. If he consumes alcohol the buzzer will on and the controller send the message to the owner as "Driver consumed alcohol, no of person inside the bus =00" through GSM. Vibration sensor is used to sense that accident occurred or not. If any accident occurs, the controller automatically generates message and send to the owner as

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"Accident occurred, no of person inside the bus =00"and also buzzer will on. For counting of persons in the bus we use IR sensors it usually sense that the person boards or leaves.

The another w*ay to provide safety purpose mainly many persons use mobile phones while driving it may occur many accidents. For this reason we proposed an application that if the driver gets any incoming call while he is in driving then the ARM controller is used to send message to specific received call "that the person you are trying call is in driving "and it automatically disconnect the incoming call through GSM modem.

IV RECEIVER SECTION:

Receiver section consists of mobile phone. The project involves both hardware and software. The total transmitting information can be monitored by the owner by using GSM modem. By this receiver section of mobile phone the owner will comfortably monitor the information of the bus. And the passenger be active while the total information is displayed on LCD.
Then step by step procedure of the smart bus see in the below flow chart.

B) Flow Chart

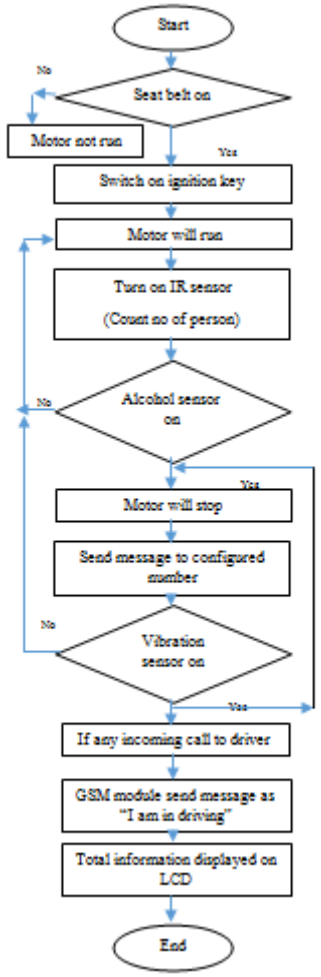

Fig: Flow chart for smart bus

III. APPLICATION & ADVANTAGES

Advantages:

- Providing safe and secure journey to the travelers.
- The total information of the bus is known to the owner.
- We can save many more lives for healthy India.
- The system is automatic and user friendly.

Applications:

For safety and secure transportation in

- Educational institution.
- Daily transportation.
- Private sector travels.
- Office management.

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IV. RESULTS

The power supply 5V is applied to the kit of smart bus.

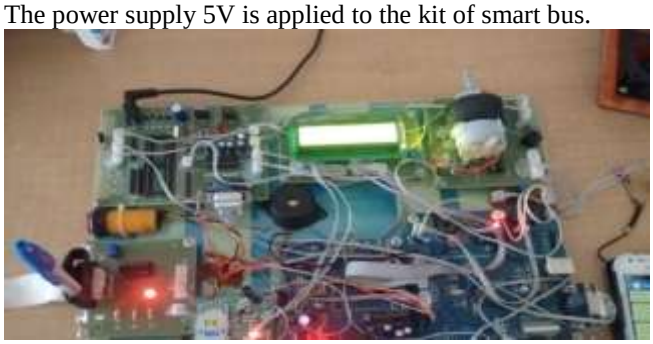


Fig: smart bus kit

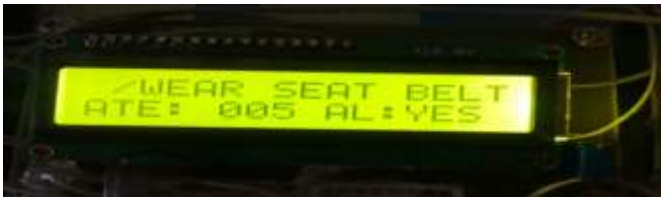
Power supply is given to the total circuit of smart bus. The next implementing procedure is explained in below figures.

Fig: Seat belt status

The microcontroller which sends whether the driver wears the seat belt or not. This information displayed on LCD and IR sensor is used for boards or leave the bus (ATE).

After wearing the seat belt ignition switch is ON

Bus is started, LCD displays message as safe journey and no alcohol consumed.



Alcohol consumed. So the bus automatically stopped (LCD displays as AL: YES).

Accident occurred the vibration sensor is activated. This information sends to controller and LCD displays accident occurred and number of persons in the bus. Buzzer will be ON, Then the bus automatically stop.

In driving if any incoming call occurred it disconnect within two rings and send message as I'm in driving.

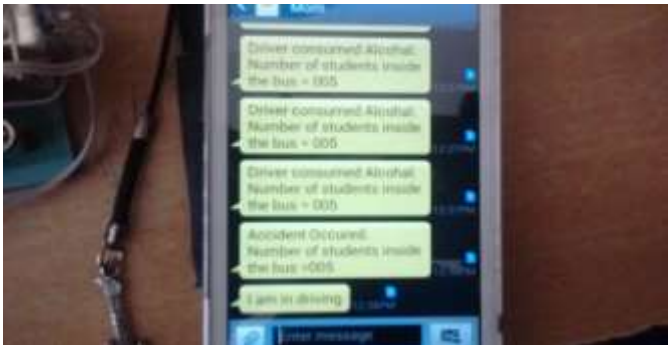


Fig: Alert message to configured number

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The total information of consumption of alcohol, if any accident occurred, number of persons in the bus and I'm in driving send to the mobile through the GSM.

V. CONCLUSION

This microcontroller based SMART BUS system profits the human life by reducing the recurrently happening accidents. Besides being cost effective we also induce other benefits from this idea such as: increasing safety among passengers, friendly secure, undoing mismanagement from driver and detecting whether he is consumed alcohol or not and sending that driver is in perfect position to drive the bus to head of the department and displaying all these messages on the LCD display for passengers security.

VI.FUTURE SCOPE

Further work is needed to complete the transit web service (API) to process requests and responses within the bus system. Research needs to be conducted on a programming language to develop a smart phone app that will meet the minimum requirements.The design can be made more enhanced in future support by using of GPS.

VII. ACKNOWLEDGEMENT

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