

SMART BUS

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ABSTRACT

The proposed system, Smart Bus is intended to create awareness on pollution, prevention of stamped and to allow only authorized person to step in. The entire project is divided into three modules. Module 1 is visitor counter. Module 2 is Authentication verification. Module 3 is Air quality Measurement.

KEYWORDS: *Ultrasonic Sensor, RFID, MQ135 Sensor*

Article History

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INTRODUCTION

The main issue with public bus transport is that they share roads with cars & bikes. This tends to reduce their travel time, unless given a dedicated corridor like trains. In peak hours, most buses tend to get over crowded, resulting in uncomfortable travel experiences to all the users. Most people have no seats left and keep standing till their destination arrives.

The proposed system has an ultrasonic sensor which counts the number of people entering into the bus and also maintains a track of distance between the sensor and the person if the count value is above a certain fixed level the led attached to the circuit glows to indicate that the maximum count has been reached

The air pollution is another problem in public transports in-order to create awareness on this agas sensor is attached which displays the quality of the surrounding air in parts per million.

Another important feature of the system is that it allows only authenticated users who have an id tag which will be verified with the RFID technique. This method can also be deployed in school & college buses to verify the students entering into their buses are only from their institution.

PROPOSED SYSTEM

In the proposed system we are using a ultrasonic sensor to count the number of persons entering into the bus and the count is displayed to all and when the count exceeds a certain limit the sensor triggers the led to glow which intimates the bus is filled with seated passengers.

In order to create awareness regarding the harmful gases surrounding the environment. A gas sensor is attached to the circuit which constantly displays the air quality at present in that location. The gas sensor displays the values in ppm.

The authentication verification methodology follows an RFID mechanism where a radio transponder, a radio receiver works when triggered by an electromagnetic pulse. The tags transmit digital data, usually a number to the reader and if the number matches with the embedded list of number in the microcontrollers uploaded code the reader displays a message as authorized access or else it displays access denied.

Module-1: Visitor Counter

Figure 1 shows circuit consists of a microcontroller, led, Ultrasonic sensor, resistor and connecting wires. An ultrasonic sensor is an electronic device that measures the distance of a target object by emitting ultrasonic sound waves, and converts the reflected sound into an electrical signal. Ultrasonic waves travel faster than the speed of audible sound (i.e. the sound that humans can hear). Whenever the ultrasonic sensor count exceeds a certain value it triggers the led to glow.

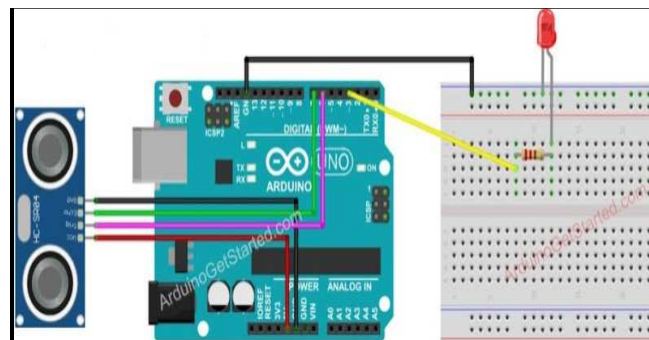


Figure 1

Output

Figure 2 shows monitored from the Microcontroller we can see the distance between the user and the sensor just below the count Readings. For testing purpose the maximum count was set to 5 after which the led glows to indicate the bus is occupied.

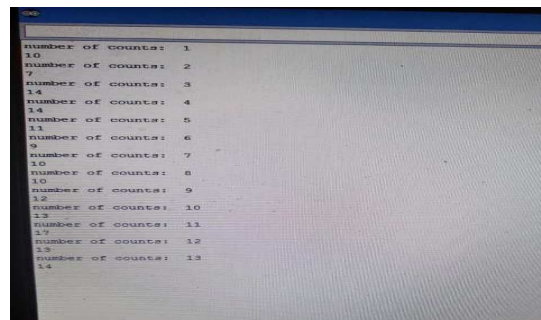


Figure 2

Module-2: Authentication Verification

Radio-Frequency Identification (RFID) uses Electromagnetic fields to automatically identify and track tags attached to objects. An RFID system consists of a tiny radio transponder radio receiver and transmitter. When triggered by an electromagnetic interrogation pulse from a nearby RFID reader device, the tag transmits digital data, usually an identifying inventory number, back to the reader RFID tags are used in many industries. For example, an RFID tag attached to an automobile during production can be used to track its progress through the assembly line, RFID-tagged pharmaceuticals can be tracked through warehouses, and in livestock and pets enables positive identification of animals. Tags can also be used in shops to expedite checkout, and to prevent theft by customers and employees.

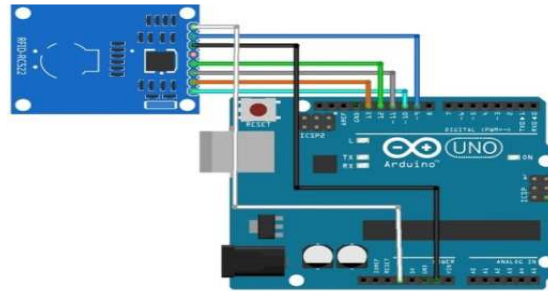


Figure 3

Output

When the number in the tag and the reader matches the module displays authorized access message, else it displays an access denied message

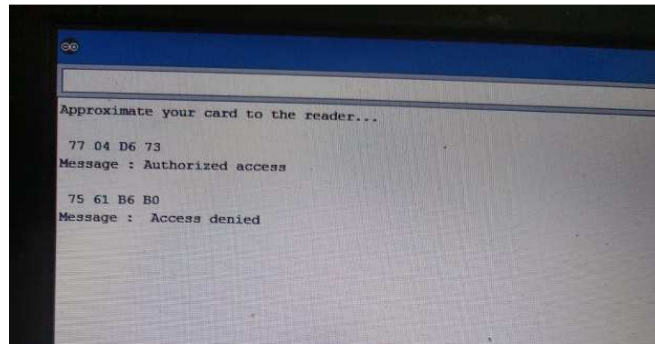


Figure 4

Module-3: Air Quality Measurement

The MQ series of gas sensors utilize a small heater inside with an electrochemical sensor these sensors are sensitive to a range of gasses are used at room temperature. MQ135 alcohol sensor is a SnO_2 with a lower conductivity of clean air. When the target explosive gas exists, then the sensor's conductivity increases more increasing more along with the gas concentration rising levels. By using simple electronic circuits, like voltage divider it converts the change of conductivity to correspond output signal of gas concentration.

Here we are using the mq 135 sensor to track the air quality in terms of ppm. The air quality range for an healthy surrounding are as follows:

400-750ppm (Good for health)

750-1200ppm (Take care)

1200 and above (Harmful to health)

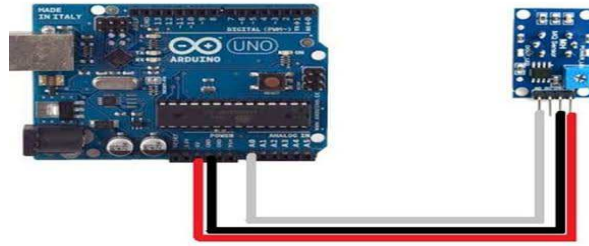


Figure 5

Output

Figure 6 shows depicts the Air quality in parts per million. In order to create awareness the appropriate result of the air quality is displayed.

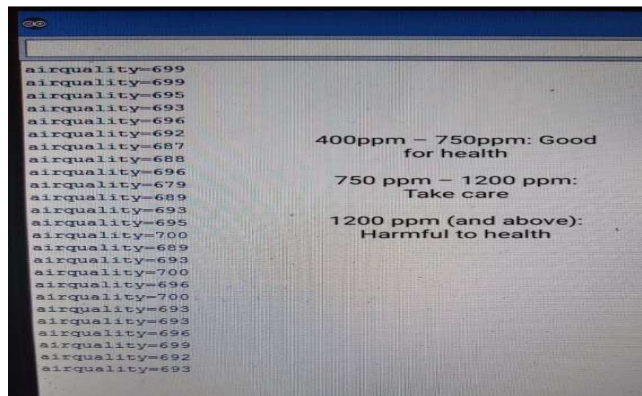


Figure 6

CONCLUSIONS

The proposed system is all about awareness on air pollution, prevention of stamped and authorized person access. Many youngsters prefer footboard rather than sitting in bus, so many elderly person on seeing the people in footboard may think that the bus is completely occupied and wait for the next bus. Our system avoids this issue by displaying the number of persons in the bus count. And also the gas sensor creates awareness about the pollution in the surrounding and encourages making the environment free from harmful gases. The authentication verification mechanism allows only the authorized person to enter into the bus. This module can be adopted in the school and college buses to prevent only these institution students who have paid the fees to enter.

REFERENCES

1. Mr. A J Kadam, Mr. Virendra Patil, Mr. Kapish Kaith, Ms. Dhanashree Patil, Ms. Shambhavi Bendre, Dept. Of Computer Engineering, AISSMS COE, University of Pune1-5 “Smart Bus for Smart City using IOT Technology” *International Journal of Advanced Research in Computer and Communication Engineering ISO3297:2007Certified Vol. 7, Issue 1, January2018.*
2. prof. S.U. Ghumbre Prof. Anilkumar J. Kadam, High Performance Clustering, *International Journal of Engineering Research and Applications (IJERA) ISSN: 2248-9622*

3. Rohit Mohite Prof. Anil Kadam, Rohit Karpe, Ankit Hegde, Akash Kinge, Wlan Monitoring Using Android Mobile Phone, *International Journal of Application or Innovation in Engineering & Management (IJAEM)*
4. India Mahesh S. Shinde AISSMS COE Pune University, Maharashtra, India Anilkumar Kadam AISSMS COE Pune University, Maharashtra,
5. Cluster Oriented Optimized Cloud Task Scheduling Strategy using Linear Programming, *International Journal of Computer Applications*
6. Reshma Suryawanshi Prof. Anil Kadam, Rashmi Agale, Sanjyot Bhosale, Gautami Chaudhari, Cloud-Based Centralized Platform for API Testing, *International Journal of Application or Innovation in Engineering & Management (IJAEM)*.

