Implementation of IOT Based Vehicle Entry Registering System

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***Abstract*- The system is to monitor pick-up/drop-off of school children to enhance the safety of children during the daily transportation from and to school. The system consists of two main units, a bus unit, and a school unit. The bus unit the system is used to detect when a child boards or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or leave the bus and issues an alert message accordingly. Each bus driver will have a QR code reader and each student will have a school ID card with unique QR code on reaching bus the driver will scan the code and online server will send a message to the parents and as well as school authority with student data and current location of the bus. This process can also initiate at the time of leaving the students with school buses.**

***Index terms*- Vehicle Entry, IoT, Embedded System, Radio Frequency Identification**

INTRODUCTION

The system consists of two main units, a bus unit, and a school unit. The bus unit the system is used to detect when a child boards or leaves the bus. This information is communicated to the school unit that identifies which of the children did not board or leave the bus and issues an alert message accordingly. The system has a developed web-based database-driven application that facilities its management and provides useful information about the children to authorized personal. A complete prototype of the proposed system was implemented and tested to validate the system functionality. The results show that the system is promising for daily transportation safety Student and bus tracking system. Each bus driver will have a QR code reader with a unique code. On reaching the bus the driver will scan the code and the online server will send a message to the parents and as well as school authority with student data and current place of the bus. In this modern society, the crime rate is increasing and among the popular. Victims are the small institutes. This is because small companies usually do not have appropriate gating. It uses QR code technology to identify the identity of the bus. This technology not only used in the institutes but also residential areas, paid parking zones and several other significant areas. This project proposes the development of a gate system to allow authorized staff to enter the institutes' premises. The regular web camera will capture the QR codes scanned by the buses and have them verified by the software application. In proposed system presents the development and implementation of a digital driving system for a semi-autonomous vehicle to improve the driver-vehicle interface. Each bus driver will have a QR code reader and each student will have a school ID card with unique QR code on reaching bus the driver will scan the code and online server will send a message to the parents and as well as school authority with student data and current location of the bus. This process can also initiate at the time of leaving the students with school.

DEVICE ARCHITECTURE

Flash, EEPROM, and SRAM are all integrated onto a single chip, removing the need for external memory in most applications. Some devices have a parallel

external bus option to allow adding additional data memory or memory-mapped devices. Almost all devices (except the smallest Tiny AVR chips) have serial interfaces, which can be used to connect larger serial EEPROMs or flash chips.

PROGRAM MEMORY

Program instructions are stored in non-volatile flash memory. Although the MCUs are 8-bit, each instruction takes one or two 16-bit words. The size of the program memory is usually indicated in the naming of the device itself (e.g., the AT mega64x line has 64 kB of flash, while the ATmega32x line has 32 kB). There is no provision for off-chip program memory; all code executed by the AVR core must reside in the on-chip flash. However, this limitation does not apply to the AT94 FPSLIC AVR/FPGA chips. Some devices have a parallel external bus option to allow adding additional data memory or memory-mapped devices.

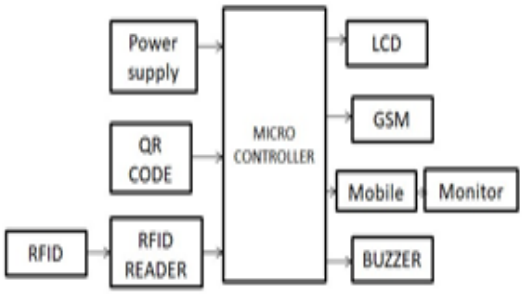

Fig.1. Block Diagram

QR CODE AND RFID TAG READER

The QR (Quick Response) Code is a two-dimensional (2-D) matrix code• that belongs to a larger set of machine-readable codes, all of which are often referred to as barcodes, regardless of whether they are made up of bars, squares or other-shaped elements. Compared with 1-D codes, 2-D codes can hold a larger amount of data in a• smaller space, and compared with other 2-D codes, The QR Code is used in fields as diverse as manufacturing and mobile marketing.

The QR Code modules perform several functions: Some contain the actual data itself, while others are grouped into various function patterns that improve reading performance and allow symbol alignment, error correction, and distortion compensation. The timing pattern lets the scanning device know the size of the symbol.• There is also a required "quiet zone," a four-module- wide buffer.• Conventional 2-D matrix codes required a considerable amount of time to be• spent searching a symbol's code to determine its angle of orientation, position (x and y coordinates) and size. To address this problem, the QR Code was designed with special position detection patterns located in three corners of each symbol.

RFID

Radio Frequency Identification (RFID) is an automatic identification technology that utilizes a tag, which may be passive (no internal power) or active (internal battery power), to allow encoded identification, location or other sensory data to be transmitted to a tag reader, which decodes and processes the information. The RFID tag contains a transponder with a digital memory chip that possesses a unique ID, and an antenna to send and receive data to a reader. The RFID tag reader consists of an antenna, transceiver, and decoder. The reader generates a continuous activation signal, and when a tag is within range of this signal, the tag sends the reader its identification. Upon signal detection and identification of the tag, the tag reader then sends command signals to it. Responding to commands from the reader, the tag sends out encoded data. This data which is sent out on a modulated frequency is picked up and decoded by the reader, which sends it to a host computer to be processed.

GSM TECHNOLOGY

GSM refers to second-generation wireless telecommunications standards for digital cellular services. First deployed in Europe, it is based on TDMA (Time Division Multiple Access) technology. GSM uses three frequency bands: 900 MHz, 1800 MHz, and 1900 MHz. Dual-band phones operate on two out of three of these frequencies, while tri-band phones operate on all three frequencies. It is a standard set developed by the European Telecommunications Standards Institute (ETSI) to describe protocols for second-generation (2G) digital cellular networks

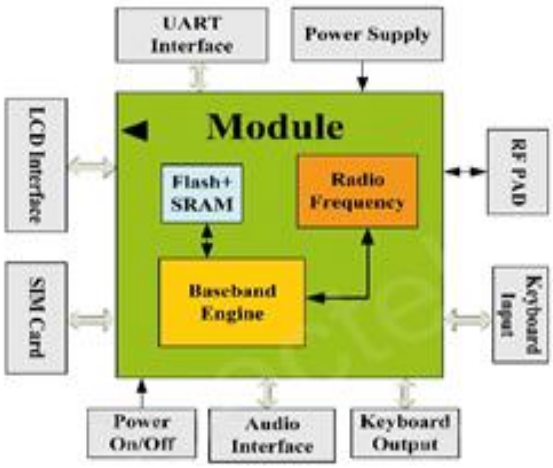

Fig.2.GSM Module

LCD DISPLAY

A liquid crystal display (LCD) is a thin, flat electronic visual display that uses the light modulating properties of liquid crystals (LCs). LCs does not emit light directly.

Fig.3.LCD DISPLAY

They are used in a wide range of applications including computer monitors, television, instrument panels, aircraft cockpit displays, signage, etc. They are common in consumer devices such as video players, gaming devices, clocks, watches, calculators, and telephones. LCDs have displaced cathode ray tube (CRT) displays in most applications. They are usually more compact, lightweight, portable, less expensive, more reliable, and easier on the eyes.

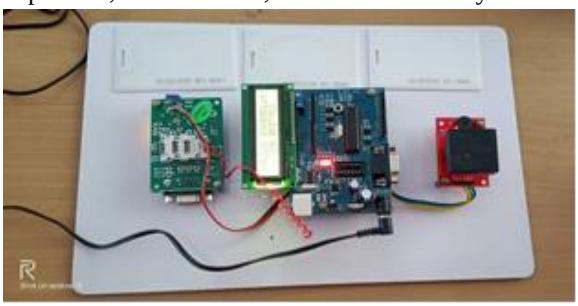

Fig.4. Hardware Setup

CONCLUSION

This paper presented an RFID-based system that aims at enhancing the safety of children during the daily bus trip to and from the school. RFID-based detection unit located inside the bus detects the RFID tags worn by the children. It then sends, via a GSM modem, the relevant data to the system database server. The system checks and detects which child did not board or leave the bus and issues an alert message to this effect. Also, the system checks the children attending and updates the database. The parents can log into the system website and monitor the details of their children.

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