

RFID based Attendance monitoring system Using IOT with TI CC3200 Launchpad

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Abstract:

RFID means Radio Frequency Identification is a wireless identification technique which becomes very popular these days and is used for the identification of physical objects like products, humans etc by the use of radio frequency. This technique is much more advantageous, safe, secure and easy with lower overhead in contrast with the other conventional technique used. It is much faster and it has two components i.e. RFID tag and RFID reader. In this paper we have proposed IOT based attendance management system, which updates the students attendance in cloud spreadsheets, which could be accessed from anywhere and SMS is sent to the respective mobiles.

KEYWORDS:

RFID Reader, IOT, SMS, Remote data monitoring.

I.INTRODUCTION :

Remote monitoring system is a real-time monitoring system that monitors the system from a remote/mobile location. The conventional method of taking attendance by calling names or signing on paper is very time consuming and insecure, hence inefficient. Radio Frequency Identification (RFID) based attendance system is one of the solutions to address this problem. This system can be used to take attendance for student in school, college, and university. It can also be used to take attendance for workers in working places. Its ability to uniquely identify each person based on their RFID tag type of ID card make the process of taking the attendance easier, faster and secure as compared to conventional method. Students or workers only need to place their ID card on the reader and their attendance will be taken immediately.

With real time clock capability of the system, attendance taken will be more accurate since the time for the attendance taken will be recorded. The system is connected to the computer through wifi and stores the attendance in cloud spreadsheet and SMS is sent to the respective mobiles.

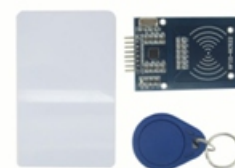


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II.HARDWARE REQUIREMENTS:

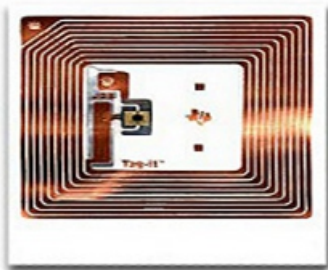
RF ID TECHNOLOGY:

RFID is short for Radio Frequency Identification. Generally a RFID system consists of 2 parts. A reader and one or more Transponders (tags) RFID systems evolved from barcode labels as a means to automatically identify and track products and people. You will be generally familiar with RFID systems as seen in: Access Control: RFID Readers placed at entrances that require a person to pass their proximity card (RF tag) to be “read” before the access can be made.



Contactless Payment Systems: RFID tags used to carry payment information. RFIDs are particularly suited to electronic Toll collection systems.

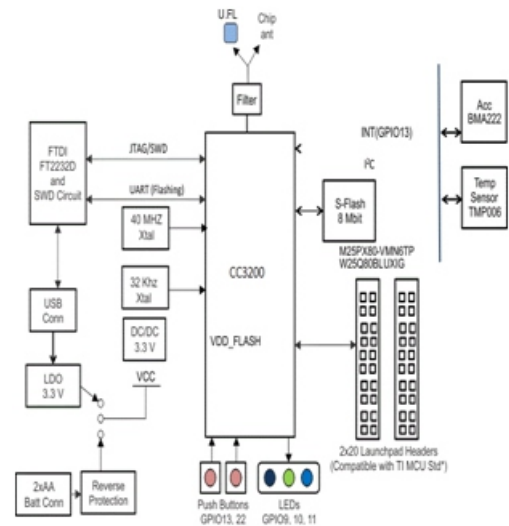
Tags attached to vehicles, or carried by people transmit payment information to a fixed reader attached to a Toll station. Payments are then routinely deducted from a users account, or information is changed directly on the RFID tag. Product Tracking and Inventory Control: RFID systems are commonly used to track and record the movement of ordinary items such as library books, clothes, factory pallets, electrical goods and numerous items



MFRC522:

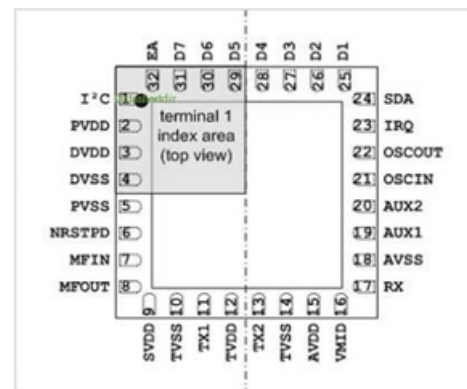
The MFRC522 is a highly integrated reader/writer IC for contactless communication at 13.56 MHz. The MFRC522 reader supports ISO/IEC 14443 A/MIFARE mode. The MFRC522's internal transmitter is able to drive a reader/writer antenna designed to communicate with ISO/IEC 14443 A/MIFARE cards and transponders without additional active circuitry. The receiver module provides a robust and efficient implementation for demodulating and decoding signals from ISO/IEC 14443 A/MIFARE compatible cards and transponders. The digital module manages the complete ISO/IEC 14443 A framing and error detection (parity and CRC) functionality. The MFRC522 supports MF1xxS20, MF1xxS70 and MF1xxS50 products. The MFRC522 supports contactless communication and uses MIFARE higher transfer speeds up to 848 kBd in both directions. Highly integrated analog circuitry to demodulate and decode responses. Buffered output drivers for connecting an antenna with the minimum number of external components. Supports ISO/IEC 14443 A/MIFARE. Typical operating distance in Read/Write mode up to 50 mm depending on the antenna size and tuning. Supports MF1xxS20, MF1xxS70 and MF1xxS50 encryption in Read/Write mode. Supports ISO/IEC 14443 A higher transfer speed communication up to 848 kBd. Supports MFIN/MFOUT. Additional internal power supply to the smart card IC connected via MFIN/MFOUT. Supported host interfaces. SPI up to 10 Mbit/s. I2C-bus interface up to 400 kBd in Fast mode, up to 3400 kBd in High-speed mode. RS232 Serial UART up to 1228.8 kBd, with voltage levels dependant on pin-voltage supply.

FIFO buffer handles 64 byte send and receive Flexible interrupt modes Hard reset with low power function- Power-down by software mode Programmable timer. Internal oscillator for connection to 27.12 MHz quartz crystal 2.5 V to 3.3 V power supply CRC coprocessor Programmable I/O pins Internal self-test



CC3200 LaunchPad:

The high performance CC3200 is the industry's first single-chip Microcontroller (MCU) with built-in Wi-Fi connectivity for the LaunchPad™ ecosystem.



Created for the Internet of Things (IoT), the SimpleLink Wi-Fi CC3200 device is a wireless MCU that integrates a high-performance ARM® Cortex®-M4 MCU allowing customers to develop an entire application with a single IC. With on-chip Wi-Fi, internet and robust security protocols, no prior Wi-Fi experience is needed for faster development. The CC3200 LaunchPad is a low-cost evaluation platform for ARM® Cortex™-M4F-based microcontrollers. The LaunchPad design highlights the CC3200 Internet-on-a-chip™ solution and Wi-Fi capabilities.

The CC3200 LaunchPad also features programmable user buttons, RGB LED for custom applications and on-board emulation for debugging. The stackable headers of the CC3200 LaunchPad XLI interface demonstrate how easy it is to expand the functionality of the LaunchPad when interfacing with other peripherals on many existing BoosterPack add-on boards such as graphical displays, audio codec, antenna selection, environmental sensing, and much more. Figure 1 shows a photo of the CC3200 LaunchPad.

III. APPLICATIONS:

Schools
Colleges
Hostels
Institutions

IV. ADVANTAGES:

Easy to use
Low cost
Easy maintenance

V. CONCLUSION:

It has been developed by integrating features of all the hardware components used. 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 and with the help of growing technology the project has been successfully implemented. The system can be adopted in the future for loads supplied by the power system, which enables the monitoring of energy consumption. Manual functioning (switching on and off lights) of the road lights can be removed and having the automatic street light using LDR much of energy can be saved, manual labour is not needed.

ACKNOWLEDGEMENT:

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