

Digitalization of India using smart card based access and bio-matric for authentication

^{#1}Mayuresh Barbade, ^{#2}Siddharth Patil, ^{#3}Samresh Singh,
^{#4}Shubham Das

¹mayuresh.barbade007@gmail.com

²siddharth1008patil@gmail.com

³babuaanashu52@gmail.com

⁴shubhamdas100@gmail.com



^{#1234}Department of Computer Engineering,
NBN Sinhgad School of Engineering.

ABSTRACT

There has been rising demand for secure system that must be dependable and quick respond for the industries and company. RFID (Radio Frequency Identification) is one of the consistent and fast means of identify the material object. We use the thumb access for authentication and RFID card for access documents. In the long-ago the barcode's are more preferable as compared to RFID because of their cost but now a day's RFID are easily available and are more convenient to use. Research has made some drastic changes which makes its programming a lot shorter and easier. To overcome problem of showing any card for particular government officer. we are going to develop a system which will save time and hassle for the officer wanting to check the document of the particular user whose information is stored in the data base.

Keywords: RFID Card, Reader, controller, digitalization, biometric.

ARTICLE INFO

Article History

Received: 5th December 2017

Received in revised form :

5th December 2017

Accepted: 9th December 2017

Published online :

9th December 2017

I. INTRODUCTION

RADIO FREQUENCY IDENTIFICATION (RFID):

This paper provides knowledge on radio frequency identification (RFID) technology. Initially RFID tags were made to eventually replace barcodes in different chains. Their advantages are that they can be read wirelessly and with no line of sight, contain more data than barcodes, and are stronger. As the paper describes the recent technology, include the frequency ranges used and standards required. With the increase in ubiquity of RFID tags, however, privacy became unease. The paper outlines probable attack that can go against one's privacy and it also describes contradict measures. The RFID technology did not stop at thing-level tagging. The paper also presents current research that focuses on locating and tracking labeled object that move. Since the uses for RFID tags are so extensive, there is a large interest in lowering the costs for production of RFID tags. It turns out that printing tags may become a possible alternative to traditional production. RFID tags or simply "tags" are small transponders that respond to queries from a reader by wirelessly transmitting a serial number or alike identifier. They are greatly used to track items in

production environment and to label items in supermarkets. They are usually thought of as a highly developed barcode.

However, their possible region of use is much bigger. This paper presents applications that are probable using RFID technology such as locate access control, location tracking, billing easily and others. RFID tags are expected to multiply into the billions over the coming few years and yet, they are been treated the same way as barcodes without taking into consideration the impact that this advanced technology has on privacy.



Fig 1. RFID card and Reader

II. PROBLEM STATEMENT

To overcome problem of showing any card for particular government officer. we are going to develop a system which will save time and hassle for the officer wanting to check the document of the particular user whose information is stored in the data base.

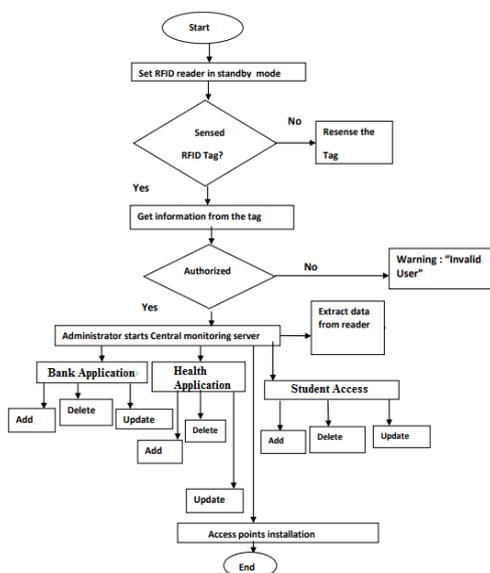
III. LITERATURE REVIEW

Radio Frequency Identification (RFID) is an affordable technology that can be used for applications such as security, tracking, and access control. This Application Note will detail the required steps to program a RFID Card Reader for access control in an ArcelorMittal Plant. This Application Note will show and describe the programming needed to successfully identify the unique digital ID of a RFID tag and either grant or deny it access. These steps include the use and programming of a microcontroller.[1]

RFID, radio-frequency identification, uses electromagnetic fields to transfer data. RFID is not a single product but rather a system, which is composed of: a RFID tag (transponder), reader (transceiver) and back-end application system (or database), which require the support of a computer network [2]. For this system the transponder is a passive RFID tag. Passive tags are cheaper, lighter, and smaller than the other tag options. That is because unlike other RFID tag types, passive tags do not require batteries. Passive tags use radio energy transmitted by the reader as a power source. Since the RFID reader powers the RFID tag the tag must be within 2 to 5 inches of the RFID reader in order to be read. It is also because the tag is passive that our RFID reader must be active. The RFID reader not only communicates with the RFID tag, but a microcontroller as well. The microcontroller in this application will serve as the middleman between the RFID reader and the database. The microcontroller notifies the reader if the serial identification code from the RFID tag has the clearance to gain access to the plant or not.

IV. PROPOSED MODEL

Flow Chart of the Proposed System:



The granular details and specifications will be explained. And we also explain the flow of the system using algorithm.

- (1) Start.
- (2) Centralized server running.
- (3) RFID reader is waiting to get a tag.
- (4) Data simultaneously send to the controller.
- (5) Authentication process identification
- (7) All documents check from the database server
- (7) Display the customer ID on LCD.
- (8) The authentication will be automatically success from the user card.
- If (card is not valid)
- Authentication failure;
- Else
- Card is valid;
- (9) After success of the system maintain the users log.
- (10) End.

Module (user)

- Login
- Registration
- Data Base server
- RFID Tag
- RFID Reader

System (admin)

- User Record Maintain
- Authentication Module
- Unique record fetch
- Tag Identification

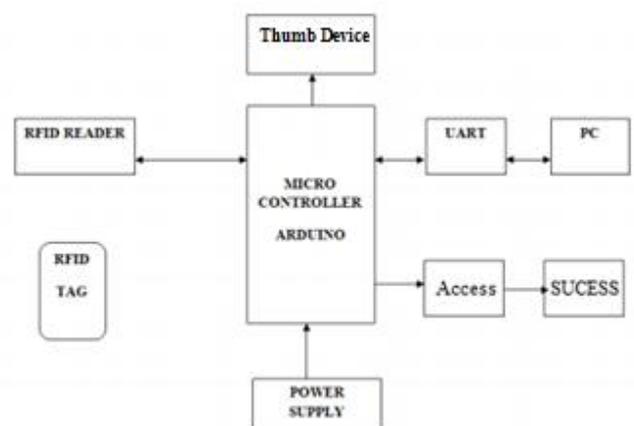


Fig 2. Block diagram

V. SYSTEM SPECIFICATION

Controller:

A microcontroller is a small and low-cost computer built for the purpose of dealing with specific tasks, such as displaying information in a microwave LED or receiving information from a television's remote control. Microcontrollers are mainly used in products that require a degree of control to be exerted by the user.

RFID Reader:

An RFID reader's function is to interrogate RFID tags. The means of interrogation is wireless and because the distance is relatively short; line of sight between the reader and tags is not necessary. A reader contains an RF module, which acts as both a transmitter and receiver of radio frequency signals.

RFID Tag:

RFID tagging is an ID system that uses small radio frequency identification devices for identification and tracking purposes. An RFID tagging system includes the tag itself, a read/write device, and a host system application for data collection, processing, and transmission.

Thumb Device:

A Biometric device is a security identification and authentication device. Such devices use automated methods of verifying or recognizing the identity of a living person based on a physiological or behavioral characteristic.

VI. CONCLUSION

This system allows for the availability of all the important documents that a user will require when he's applying for a bank loan or for many other reasons. This allows for the secure and a protected way of viewing individual documents without the hassle of the traditional methods of carrying all the documents wherever we go.

VII. ACKNOWLEDGMENTS

I wish to express my profound thanks to all who helped us directly or indirectly in making this paper. Finally I wish to thank to all our friends and well-wishers who supported us in completing this paper successfully I am especially grateful to our guide for time to time, very much needed, valuable guidance. Without the full support and cheerful encouragement of my guide, the paper would not have been completed on time.

REFERENCES

[1] Aamir Nizam Ansari, Mohamed Sedkyl, Neelam Sharma and Anurag Tyagil Faculty of Computing, Engineering "RFID-Based Students Attendance Management System" Vol 2, Issue 7, July 2015.

[2] G.Lakshmi Priya1, M.Pandimadevi, G.Ramu Priya1, and P.Ramya., " Face Recognition Based Attendance International Journal of Engineering and Techniques - Volume 2 Issue 3, May – June 2016 ISSN: 2395-1303 <http://www.ijetjournal.org> Page 32 Marking System", in Architecting the Internet of Things, Berlin, Germany: Springer-Verlag Vol 4, Issue 5, pp 38-43, Jan 2011.

[3] ehun-wei Tseng et.al Department of Information Management Cheng Shiu University Kaohsiung County, Taiwan Design and Implementation of a RFID-based Authentication System by Using Keystroke Dynamics.

[4] Andrey Larchikov, Sergey Panasenko, Alexander V. Pimenov, Petr Timofeev ANCUUD Ltd. Moscow, Russia Combining RFID-Based Physical Access Control Systems with Digital Signature Systems to Increase Their Security.

[5] M. Vazquez-Briseno, F. I. Hirata, J. de Dios Sanchez-Lopes, E. Jimenez-Garcia, C. Navarro-Cota and J. I. Nieto-Hipolito. Using RFID/NFC and QR-Code in Mobile Phones to Link the Physical and the Digital World, Interactive Multimedia, Dr. Ioannis Deliyannis (Ed.), ISBN: 978-953-51-0224-3, InTech, 2012.

[6] P. Solic, J. Radić, N. Rozic. Software defined radio based implementation of RFID tag in next generation mobiles, IEEE Transactions on Consumer Electronics, vol. 58, no. 3, pp. 1051-1055, August 2012.

[7] A. Juels, R. Pappu, B. Parno. Unidirectional Key Distribution Across Time and Space with Applications to RFID Security, Cryptology ePrint Archive: Report 2008/044. Available at <http://eprint.iacr.org/2008/044>, 2008.

[8] T. Hollstein, M. Glesner, U. Waldmann, H. Birkholz, K. Sohr. Security challenges for RFID key applications, RFID SysTech 2007, 3rd European Workshop on RFID Systems and Technologies. June, 12-13, 2007, Duisburg, Germany. Proceedings (CD-ROM), 12 pp.

[9] Corporate Information and Personal Data Leakage in 2012. InfoWatch Analytic Report (In Russian). Information Security, #3, 2013.