



Implanting RFID Based Secure Multipurpose Smart Card Using Advanced Encryption Standard

^{#1}Pradip Patil, ^{#2}Abhinay Ingle, ^{#3}Shubhangi Dongare, ^{#4}Namrata Gavhane

¹pp638607@gmail.com

²ingleabhinay@gmail.com

³shubadongare@gmail.com

⁴namratagavhane8888@gmail.com

^{#1234}Department of Computer Engineering

JSPM's Imperial college of engineering and research, Wagholi, Pune

ABSTRACT

Smart cards are adopted by people all over the world for various applications. They are only intra Domain due to safety and reliability concern. There has been soaring demand for secure system that must be dependable and quick respond for the industries and company. RFID (Radio Frequency Identification) is one of the uniform and fast means to a technology whereby digital data encoded in RFID tags are acquisition by reader via radio waves. Using this technology we can establish secure and intermodal approach towards creating a multipurpose smart card. According to literature survey, there is no research proposal to describe that one smart card to support many application domain invariability. In this system we are going to integrate cards like Driving Licence, PAN card, ADHAR card, Ration card into single card. By using AES(Advanced Encryption Standard) algorithm the security inspection ensures that smart card provides strong security for multipurpose smart card implementation. For the security and authentication purpose the OTP(One Time Password) will be sent to the card holder and further process will be proceed for document verification at the server.

Keywords: RFID Card, Reader, Controller, Digitalization.

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I. INTRODUCTION

The most of the authentication systems use User-name – Password, Security Pin, One Time Password, Photo ID etc., and each system faces common problem of to identify/verify authorized person.[1] The system may give chance to any dishonest person if he/she knows your password or Security PIN. From the above paragraph, we can make conclusion that the Password is not suitable for our authentication system. Due to this, we have to explore new authentication system i.e 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.[4] 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.[2]

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.[7]



Fig 1. RFID card and Reader

II. PROBLEM STATEMENT

To defeat the problem of showing any card at particular office, by developing a system to validate the document of the particular user whose information is stored in the data base, which saves time and scale down inconvenience.

III. PROPOSED MODEL

Flow Chart of the Proposed System:

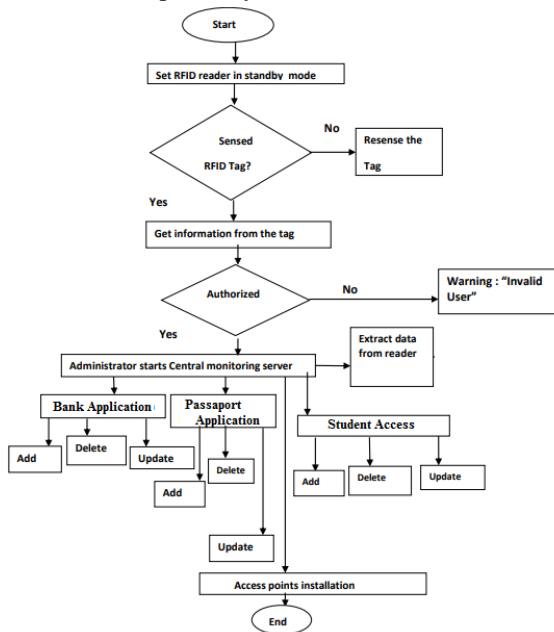


Fig 2. Flow diagram

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

IV. SYSTEM SPECIFICATION

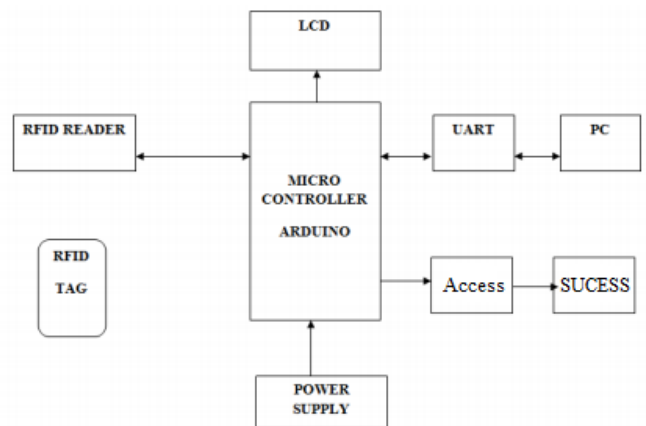
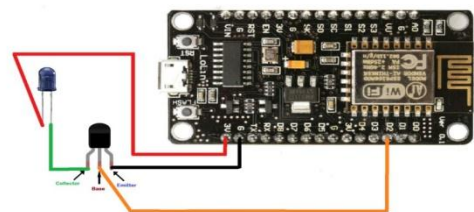


Fig 3. Block diagram

Controller:

A microcontroller is a small and low-cost computer built for the resolve of dealing with specific tasks, such as displaying information in a microwave LED or receiving information from a television's remote control. Microcontrollers are mostly 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 reasonably short; line of sight between the reader and tags is not necessary. A reader comprises an

RF module, which acts as both a transmitter and receiver of radio frequency signals. RFID stands for Radio Frequency Identification Reader. There are many uses of RFID reader in today's world. It is used to gather information from RFID tags.

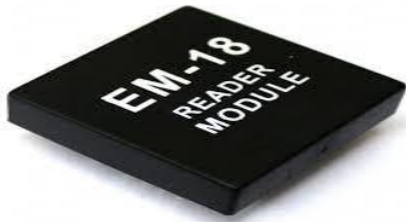


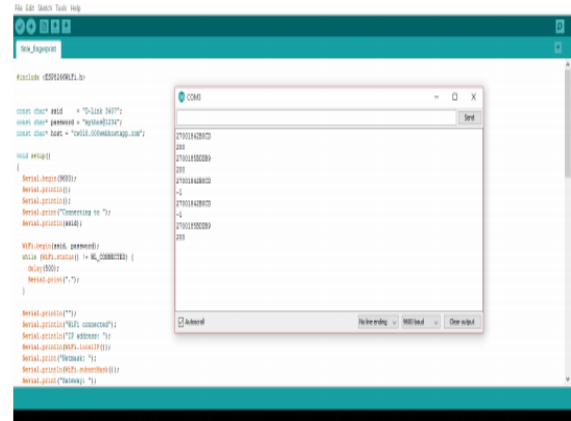
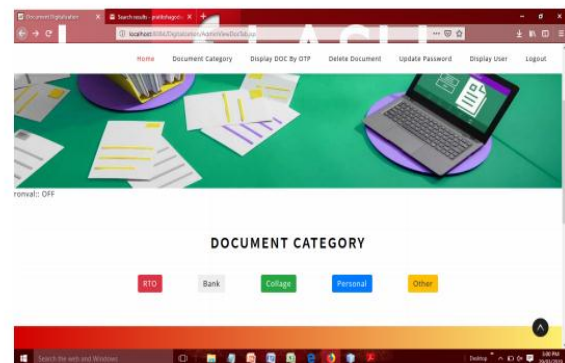
Fig 4 Connection Between RFID and ESP wifi Controller:

RFID Tag:

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



V. RESULT



APPLICATIONS:

The entire project idea is to develop safe and secure system to access the documents using OTP and unique RFID Card:

- Banks: To open an account and to apply for loans
- RTO : To apply for license and RC
- College : For admission
- Passport office: For verification purpose.

ADVANTAGES:

- The Digitalization provides more reliable backup of documents.
- No need of carrying documents all the time
- The Digitalization will provide less time consuming in government processes
- The system is eco friendly
- The system provides more security due to OTP access for authentication.

Connection Between RFID and ESP wifi Controller:

Connection between ESP wifi controller and RFID reader is shown below.

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.

VIII. FUTURE SCOPE

It will be a separate software in every field like in RTO, Bank, College admission to provide multiple services in one unique card as this project is general for all these requirements and also by using this we will have an android application for users to check the updates.

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