

## Intelligent Authentication System

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**Abstract:** - This paper deals with INTELLIGENT AUTHENTICATION SYSTEM. This system is designed computerization of identity cards that can be used to achieve the needs of increasing and demanding industrial and official security in the busy world rather than the olden system. This project is implemented using power line communications, which requires RS-232 serial communication cable. The heart of the project is EMBEDDED SYSTEM, which requires the software. Visual basic and MS Access. The hardware used here are 8051 Micro Controller, Optical sensor and Alarm. Interfacing one of the latest trends in the field of electronics. In this project interfacing is done by means of power line communication. It is used in order to reduce the bulky apparatus and system feature constant data access and much of the apparatuses already available everywhere. So it is easy to implement. Through power line data can be transmitted easily and it is cheaper one, since there is no need of new wiring it can be just plugged in.

**Index terms:**-Intelligent Authentication, RS-232, Optical sensor

### 1. INTRODUCTION

Automatic identification and access control system has become necessary to overcome the security threats faced by many organizations in India these days. By installing the system at the entrance will only allow the authorized persons to enter the organization. The system can also be installed at various points inside the organization to track the person's movement and to restrict their access to sensitive areas in the organization. In such a way, suspicious persons can be caught which will surely improve the security level in the organization. Radio frequency identification (RFID) is a wireless technology that can be used to develop the access control system. The literature has revealed the use of this technology to automate various processes ranging from industrial sector to home control. This paper discusses the design of a security and access control system using RFID technology. The system is comprised of three modules namely entrance monitoring, exit monitoring and mess monitoring. These modules communicate to the computer system through main controller. After the information from these modules is processed by the computer, the control commands are issued to the modules for granting or denying access to the user.

### 2. LITERATURE SURVEY

In the paper [1], implemented secured and authenticate system using RFID. They utilized RFID

technology to provide solution for secure access of a space while keeping record of the use. A centralized system was developed for controlling and transaction operations.

In the paper [3], proposed system was low cost identification and authentication system which was deployed at doors of building to authenticate people. Proposed system was also accompanied with PC interfacing to see authentication details with date and time.

In the paper [5], they have integrated RFID system in the Wireless Sensor Network for checking the information from the database and authenticating the person.

### 3. PROPOSED METHOD

The three major parts of the project are RFID module, Microcontroller and Power line. At the start the RFID card is scanned on RFID module. Information in the RFID card is sent to the central computer through the microcontroller and power line. This information is verified and signals are generated according to the information. Again microcontroller gets the signals and opens the door according to them.

### 4. SYSTEM OVERVIEW

Intelligent authentication system has RFID circuit and Microcontroller circuit which are implemented on

the single base for demonstration. This has the main purpose of security.

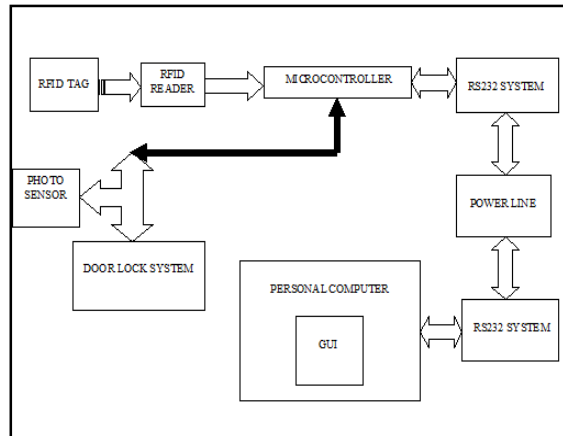


Fig 1: Main block diagram

#### 4.1 RFID

RFID is an effective automatic identification technology for variety of objects. The most important functionality of RFID is the ability to track the location of the tagged item. Based on power source, RFID tags can be classified into three major categories: active tags, passive tags, and semi-passive (semi-active) tags. An active tag contains both a radio transceiver and a battery that is used to power the transceiver. Active tags are more powerful than passive tags/semi-passive tags. RFID tags can also be classified into two categories: tags with read/write memory, and tags with read-only memory. The tags with read/write memory are more expensive than the tags with read-only memory. RFID tags operate in three frequency ranges: low frequency (LF, 30–500kHz), high frequency (HF, 10–15MHz), and ultra high frequency (UHF, 850–950MHz, 2.4–2.5GHz, 5.8GHz). LF tags are less affected by the presence of fluids or metals when compared to the higher frequency tags. RFID reader is shown in fig.1.

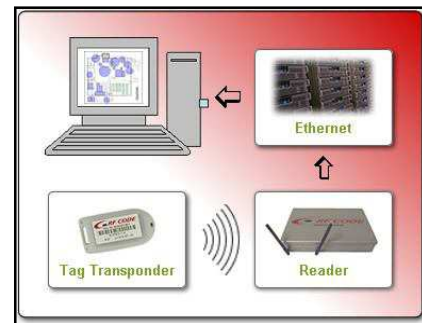


Fig 2: RFID Reader

The most important functionality of RFID is the ability to track the location of the tagged item. Typical applications of HF tags are access control and smart cards. RFID smart cards, working at 13.56MHz, are the most common members of this group.

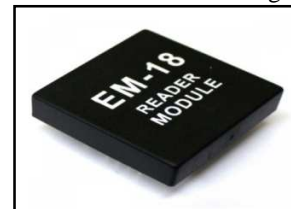


Fig 3: RFID reader module

However, UHF tags are severely affected by fluids and metals. UHF tags are more expensive than any other tag. The typical frequency of UHF tags are 868MHz (Europe), 915MHz (USA), 950MHz (Japan), and 2.45GHz. The active tag enables higher signal strength and extends communication range up to 100-200m.

#### 4.2 SERIAL COMMUNICATION – RS232

A popular way to transfer commands and data between a personal computer and a microcontroller is the use of standard interface, like the one described by protocols RS232. This is to communication conforming to RS232 protocol, the hardware for such interface is provided on board. An example will be presented showing the processing of commands received through RS232 interface, and sending of a string of numbers using the same interface. The protocol RS232 defines the signals used in communication, and the hardware to transfer signals between devices.

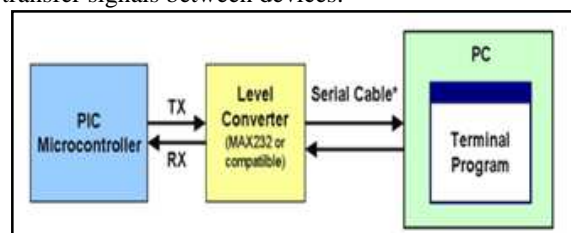


Fig 4: RS-232 communication block diagram

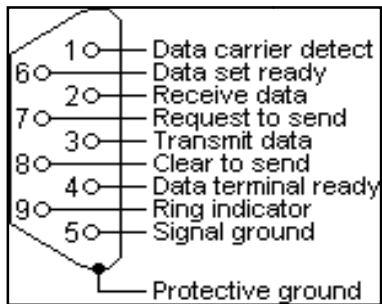


Fig 5: DB-9 connector

The standard defines voltage levels V(0) to be at least +5V at the transmitting end of the line TX, and can be degraded along the line to become at least +3V at the receiving end of the line. Similarly voltage level V(1) must be at least -5V at TX, and at least -3V at RX. The standard also defined the upper limit for these voltages to be up to  $\pm 15V$ . Logic high is transferred as V(0). The microcontroller cannot handle such voltage levels, so typically a voltage level translator is inserted between the microcontroller and the connector where the RS232 signals are available. The connectors are typically so-called D9 connectors.

## 5. FLOW CHART

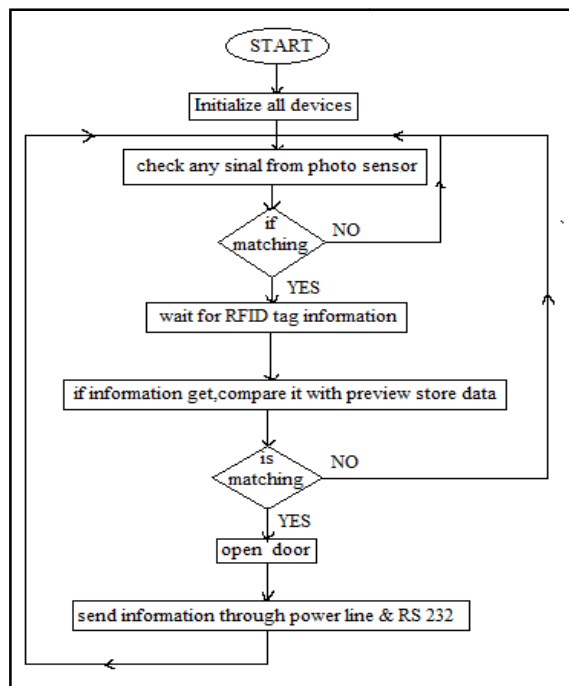


Fig 6: Transmitter operation

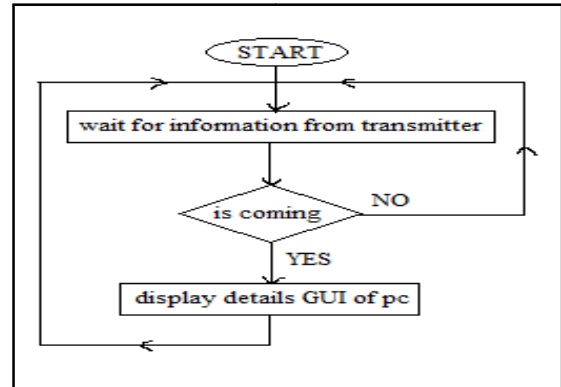


Fig 7: Receiver operation

## 6. RESULT

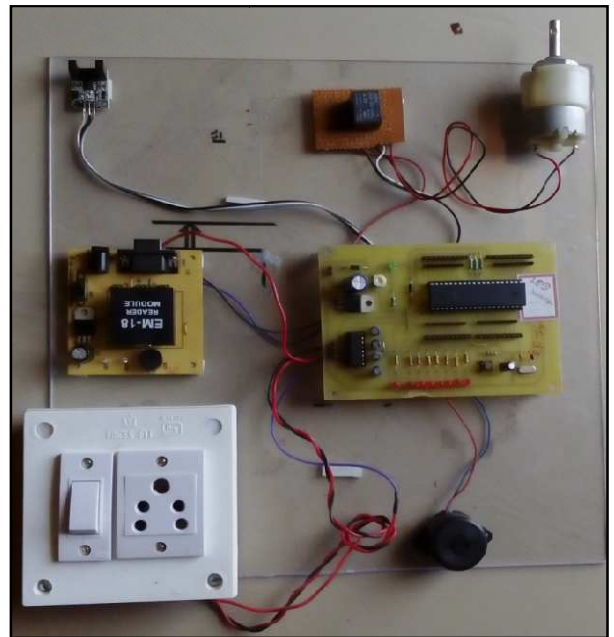


Fig 8: Setup of project

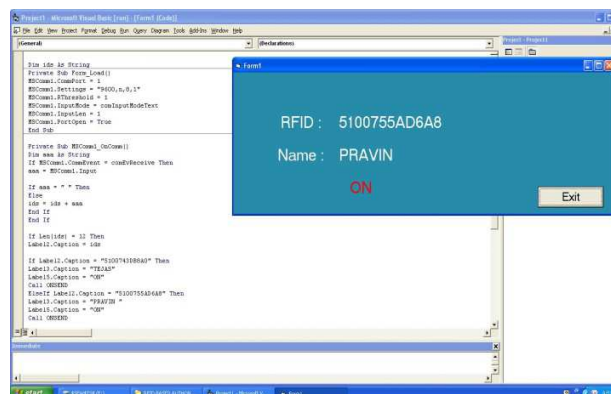


Fig 9: Project output 1

If information in the RFID is valid then on the central computer where we installed Visual Basic software result is shown as per the fig 9.

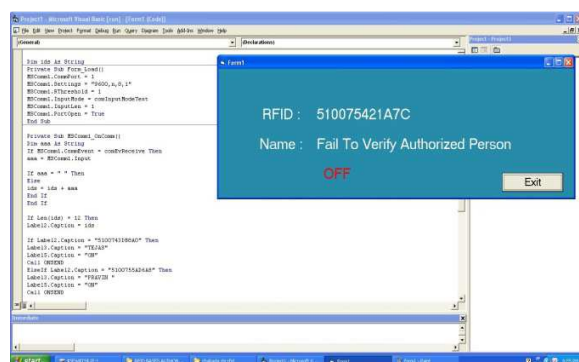


Fig 10: Project output 2

If information in the RFID is invalid then on the central computer where we installed Visual Basic software result is shown as per the fig 10.

## 7. FUTURE SCOPE

A level of security can be improved by adding the features like fingerprint scanning, face recognition, manual password, and camera addition.

## 8. CONCLUSION

We have implemented an Intelligent authentication system using RFID. It is a low cost, low in power conception, compact in size and Stand alone system.

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