

# RFID INNOVATION BASED ATTENDANCE ADMINISTRATION FRAMEWORK

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**Abstract:** RFID is a nascent technology, severely rooted by its new improvements in using radar as an indicator of adversary planes during World War II. A plethora of industries have held the advantage of RFID technology for improvement in sectors like military, sports, security, airline, animal farms, healthcare and other fields. Industry limited key applications of this technology comprise vehicle tracking, automated inventory management, animal monitoring, secure store checkouts, supply chain management, automatic payment, sport timing technologies, etc.

This paper establishes the special parts of RFID technology and centre on its core abilities like scalability and safety. It will be then enhanced by a detailed of an investigation conducted to test the making and practicality of RFID technology.

**Keywords:** RFID innovation, RFID identification, RFID applications, RFID in administration, RFID segments.

## I. Introduction

RFID, which stands for Radio Frequency Identification, is an automatic identification technology used for regaining from or storing data on to RFID Tags without any personal contact. An RFID system primarily involves of RFID Tags, RFID Reader, Middleware and a Backend database. RFID Tags are perfectly and generally identified by an identification array, governed by the rubrics of EPC global Tag Data Standard. A tag can either be passively activated by an RFID reader or it can actively send the RF signals to the reader. The RFID reader, by its antenna, reads the information stored on these tags when it is near. The reader, whose powerful range is based on its operational frequency, is made to operate at a certain frequency. The operational frequency of the reader ranges starting from 125 KHz – 2.4 GHz. The Middleware contains all those parts that are responsible for the transmission of germane instruction from the reader to the backend management systems. The Middleware can include hardware parts like cables and connectivity ports and software components like filters that monitor network operation of the system. The Backend database carries individual tag identifiers to perfectly identify the uses of each tag. The database stores record entries refer to individual tags and its uses in the process application. The RFID system is unified on its main components to obtain maximum efficiency and optimum conducts of the application. Due to its maximum degree of flexibility, the process can be quickly following for an order of uses ranging from small scale inventory cabinets to multiform and deeply rapid supply chain management systems. The amount of incorporate with this technology has controlled its outreach, the technology promises to get untapped potential.

## II. COMPONENTS OF AN RFID SYSTEM

An RFID system contains of different parts that are associated to one another by a dedicated communication path. The list of parts is as follows:

- **Tags** - Tag contains of a microchip that storing the single sequence identifier that is suitable in identifying objects separately. The sequence of students is a numeric serial, which is collected in the RFID memory. The tag memory can be constant or re-writable, which can be re-programmed electronically by the reader various times. Tags are created limited to its uses and situation. For example, paper-thin tags are combined to books in a library management system. Tags are accessible in other shapes and sizes. Tags that are started by the reader are called as Passive tags, those that do not involves outside beginning are called Active tags. A Semi-Passive tag exists, which has the aspects of both Active and Passive tags. Tags are functional on Microwave (2.4 – 2.5 GHz), High Frequency (UHF) (860 – 1500 MHz), Medium Frequency (MF) (13.56 MHz) and Low Frequency (LF) (125 kHz) [22].



Types of RFID Tags

- **Reader**- The reader is the almost major part of the RFID system. It reads rough information from the tag and sends it to the Middleware for more processing. The reader tries to communicate the tags at changing frequencies. The reader conveys by transmitting a flow of impulses, which encapsulate instructions to the tag and accepts for the tag's response. The reader further involves made up in anti-collision operation, which supports the reader to read various tags continuously. The reader is linked to the computer for data processing using a USB cable or over a wireless connection.
- **Middleware**-The middle parts is an connects limited to control the progress of data from the reader and to transfer it valuable to the backend database management systems. The middleware monitors the number of tags available in the system and separate current instruction from the readers.
- **Backend Database**-The backend database initial deals with the storage of suitable instruction registered by the reader and interrogated by the middleware. For example, the middleware in an electronically safety control system will allow to store all tag readings are accepted by the reader in the database. This useful create log entries for the system.

### III. RESEARCH

RFID technology has a extend prospect as it exceeds into a generation of developing applications. A precise research must be handling to assay the restricted and suitability of implementing an RFID system. This paper concentrates on the improving of an attendance management system using RFID technology to monitor the attendance for a group of students. This paper says to evaluate the advantages of implementing RFID technology to an actual system. The improvement of RFID in student management will gives extra capabilities like high efficiency and overall ease in management of the system.

### IV. APPLICATION DESCRIPTION

The main aim of the analysis is to perfectly identify separate students based on their particular tag identifiers. The research should shower light on how scalable and useful to the system a precise and sequential approach is appropriate to solve this problem. The key characteristics of the application include:

- To execute automated attendance
- Develop report of attendees for a particular system
- Error free tag identifier detection
- Easy scalability to absorb more records
- Stability and security in data storage

This paper establishes on the principal desire to reduce the human mistakes while storing student attendance and the formation of a data centric student attendance database system with an enhanced overall efficiency. The operation graphical user interface (GUI) is programmed using Visual Basic 6.03 and Microsoft Access is used as the database provider.

The Atmel4 AT89S52 is the brain of the system, which is a low-power high performance CMOS 8-bit microcomputer with 8K bytes of downloadable flash programmable and erasable read only memory. It is operable in two modes namely Idle mode and Power down mode. The microcontroller can be designed with the 80C51 instruction set along with extensional similar features like:

- 256 bytes of RAM5
- 32 Input/ Output data lines
- Three 16bit timers/ counters
- SPI6 serial interface
- Power off flag

The circuit consists of a 16x2 LCD7 display panel, which is the output equipment of the system. It shows the user's information when the stored tag is scan by the reader. The serial relate allows connectivity to a local database for data storage and shows the data. The input to the system is every single tag identifier stored in the RF tag, which is read by the reader. The parts are builded on the printed circuit board for refers between them.

The software component of the middleware operates the basic data send into by the hardware circuit. The raw data fed into the middleware.

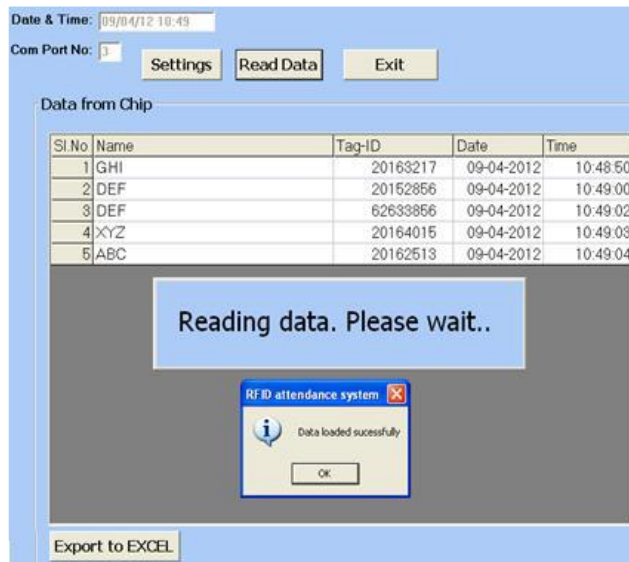
- Unique tag sequence number
- Timestamp of data entry

The middleware achieves the particular identifier from the reader and relates it with the list of stored tags. If the identifier serial is present, then the schedules are retrieved and displayed on the LCD display and the GUI. If the identifier is not existing then a new register is generated with the comparable timestamp and it is stored in the database. The student will be précised to fill in the following details:

Name, Course details, Course, Stream, Trimester

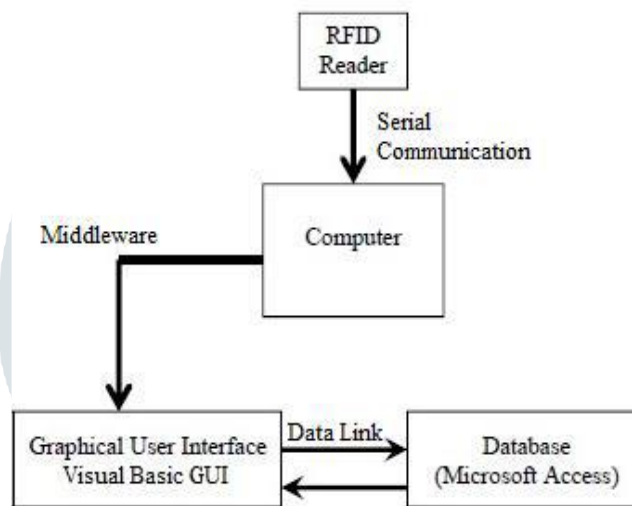
GUI form to enter new student details shows the new student listing page planned using Visual Basic 6.0. The joined functionality of takes an image of the student serves visual authenticity whilst recording attendance. Data earlier stored in the database can only be changed by the system admin.

The RFID reader handles in this research performs at a frequency of 125 KHz with a powerful scan range of 10cm only. A min read range is favored so as to control the accurately and survived of the attendance being recorded. Represents the display on the GUI as the system in the process of storing attendance. Data being registered can be quickly sends to a Microsoft Excel file for report generation. The database can be freely scaled to integrates more details about the student.

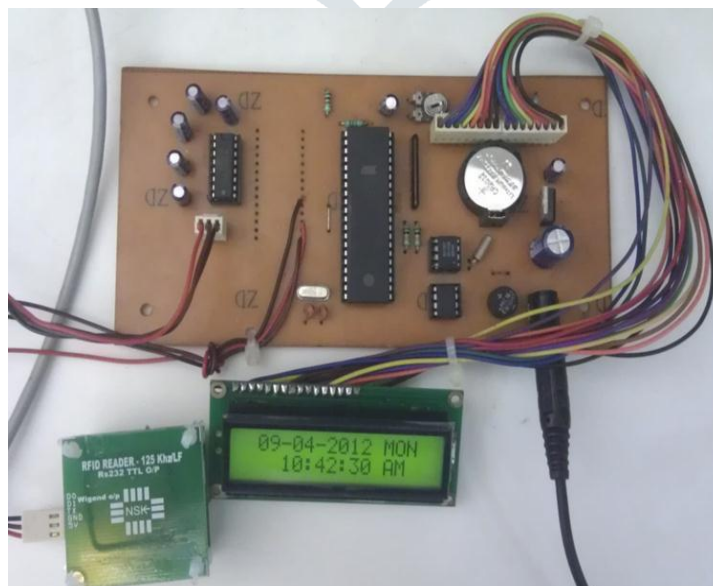


Recording student attendance

The complete system scheme is whole representing which is a block shows of the system. The figure shows the comparison of two segments which are RFID module and Visual Basic 6.0 module. On the disputed, figure shows the exact experimental setup of the research along with its single components. The execution of RFID technology in the technique must be classified in a holistic to specify its success.



Block representation of RFID system



Experimental setup

## V. Results

The analysis was organized on an example of some students, registered in a special course. The Achievement of RFID technology has clearly quickened the full process of storing attendance. The common design of storing attendance contains single manual entry a tough and a time spending process. On average, based on operation, the total time taken to store the attendance of a class of students by manual entry process takes nearly 10 minutes.

This mentions about that estimates 10 seconds per student was needed to record their attendance. This time period contains visual and written verification, after which the teacher stores the attendance. In similarity, the full time taken for receiving the attendance of 60 students using barcode and RFID technology is 120 seconds and 12 seconds. Based on the connection gathered, a projection for a batch of 100 students is also calculated.

The equivalence with the time using in data entry for other technologies, RFID technology recovers significant amount of time and highly develops the system efficiency. Also, with the uses of this technology with the progress and device capacity can be developed due to reduction in entry mistakes by manual human operations. Therefore, labour cost is decreased to execute the value-added functions.

## VI. Conclusion

The application has determined and analyzed the key uses of RFID technology. RFID will open doors to a group of functions from a plenty of industries. Although the major objection to prevent the supports is its finance cost, RFID technology contributes a very large of good business chances that could satisfy many hard adopt it. The first part of the paper illustrates the establishment of RFID technology and the use of its individual parts within the system. The second part of the paper explains the feasibility of handling RFID technology and how it is contributor of enhanced capability at lowered costs. The final part of the paper highlights one of the various practical implementations of RFID technology.

## VII. References

- [1] L. Sandip, "RFID Sourcebook", IBM Press, USA, (2005) ISBN: 0-13-185137-3.
- [2] E. Zeisel & R. Sabella, "RFID+", Exam Cram, (2006), ISBN: 0-7897-3504-0.
- [3] US. Department of Homeland Security, "Additional Guidance and Security Controls are needed over Systems using RFID and DHS", Department of Homeland Security (Office of Inspector General), (2006), OIG-06-53.
- [4] US. Department of Homeland Security, "Enhanced Security Controls needed for US-Visit's System using RFID Technology", Department of Homeland Security (Office of Inspector General), (2006), OIG-06-39.
- [5] US. Government Accountability Office, "Information Security: Radio Frequency Identification Technology in the Federal Government", (2005), Report to Congressional Requesters, GAO-05-551.
- [6] K. Ahsan, H. Shah, P. Kingston, "Role of Enterprise Architecture in healthcare IT", Proceeding ITNG2009, (2009), IEEE.