

Automatic Authorized Access and Unauthorized Denied Security Data Maintenance for Organization Using RFID Technology

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ABSTRACT

Using of this latest RFID (Radio Frequency Identification) technology for an organization to improve the efficiency of organization security and maintain the record automatically. Security is the biggest challenge for everything and everywhere it's the first priority of organization responsible authorities and they must provide the best way to deal these problems with full confidence. With help of RFID Technology it's more easy and faster to identify the object is authorized or unauthorized to access or denied from the restricted premises. RFID Technology based on two components RFID Reader (Interrogator) & RFID Tags (Transponder). The tag contains an integrated circuit a unique number that number is assign to the object and it's become the identification I'D of the object. This is used for processing data, modulating and demodulating the radio frequency signal that is being transmitted to RFID Reader, RFID reader read the tag and send the query to database for comparison of information which are exist in the existing database. The tag information is stored in the database the database is pass the query to micro controller the micro controller is perform operation on the base of object requirement and send back the information to database. The developed software performing functionality automatic and authentic. RFID Tags used as ID (identification number) registered in database is presenting the organization concerned object to allow access to the restricted premises otherwise denied the access inside the organization and saved all movement which pass through at the entrance and provide easily understandable, user-friendly and flexible interface for user. Maintain and update all information automatically. To minimize manually checking and record maintenance headache.

Keywords : Authorized Access, Unauthorized Denied, Identification I'D, RFID and RFID Tags.

I. INTRODUCTION

Security is the first priority of every organization, every place and almost for every person every organization management want to record or monitor every activity related with organization and for the purpose of security every organization spend a lot of money every year and they are using different methods and upgrading the existing technology with latest technology to monitor the activity of the organization and provide the

security satisfaction to the organization related members. The most important place is the entrance of the organization it is the first and important point for the security of organization to make the record of every person and vehicle pass through the entrance barrier to minimize or handle the unpleasant situation. For handling this situation there are number of methods to make auto recognition, like barcode system, smart cards system, and optical character recognition and RFID system [1].

A. RFID

It is smart and advanced Automatic Recognition technology abbreviated **Radio Frequency Identification** (RFID), it can enhance manually checking of people at the entrance, it's also difficult task to checked and identify each and every thing. RFID work through radio frequency electromagnetic fields to identify objects quick and easy having RFID tags when they come close to RFID reader. It's a fully developed technology that incorporate in the electrostatic or electromagnetically connect through radio frequency using different range of frequency to identify the objects, the tags have embedded radio transmitter chip to transmit data to Radio frequency receiver or decoder and the decoder can read data without line of sight [2].

RFID Reader is producing or broadcasting radio waves through RFID antenna to detect or sensing the tags within the frequency range. It have different range of antenna which defend on usable tags like; passive tags, active tags, semi passive tags. The reader can skilled to communicate the compression module using wireless medium or dedicated line to compare the detected data. The reader also have skilled to communicate without direct line and sight for sensing tags.

RFID Tags also known as a transponder, the card has embedded microchip and antenna. The microchip has unique serial number used to identify the object assigned unique identifier number (UIDN) and the antenna provide signals to transmit data to RFID reader. It can store data electronically [3]. The transponder have different verity like; read only, read and write, write only and read many time, and different type like; active tags, passive tags, semi passive tags. Active Tags have fitted power provider known as battery, and other hand the passive tags is using RF signals as initiation power to activate the

chip, comparatively active tags is used for long distance than passive tags, active tags is active and sensing at the absence of reader and passive tags active and sensing at presence of reader otherwise inactive [5]. The active tags memories varies as fallow the requirement of application some application are operate up to 1000kb (1MB), the passive tags have embedded microchip that contain a unique identification (ID) to store data in memory and chip is depend on characteristics of read or write, its permanent or changeable. RFID Tags are available in different size and in shape for different application requirement [3].

The Automatic Authorized Access & Unauthorized Denied Security System of Organization Using RFID Technology To cope with the problem of unknown access of people to an organization, people often install GPRS or some kind of Burglar alarm to make the self-aware of unknown move to inward in organization. As for as restricted place is concerned, it spreads area the large area so need of security or monitoring become unavoidable. Often separate security system are installed for transport supported people and for pedestrians. To handle the separate system to be secured human resources are need in large quantity. Manually checking of people at entrance is also difficult task or. It need a large number of gate keepers or operators and the identification of authorized and unauthorized person is a big headache gate operators.

The RFID based automatic authorized and unauthorized security system is an automatic embedded system used to identify interrelated people and vehicles with certain organization and match the identity inside the data center and perform exact action on the reference of existence data, in case the ID information is in data center then permit the authorize access otherwise unauthorized access to the premises and subsequently task accomplishment save the fresh record in a data center, which will help the requirement of report generating.

II. RELATED WORK

TABLE 1. RFID TECHNOLOGY IN A DIFFERENT TIME PERIOD.

Date	Event	Organization
From To		
1930 1940	Develop system To identify friend or foe IFF	American Navy research lab
1940 1950	Frist application identify enemy or allied	World War 2nd
1950 1960	First modern air traffic control system using IFF	Military Sector , commercial enterprises
1960 2000	introduced tags for identification	Commercially launched
2000 2003	RFID equipment interoperability were developed	Standardization for usage RFID
2003 2005	Objective to Globally promote EPC technology	MIT EPCglobal organization
2005 Up to date	Start attractiveness commercially use local market	Wal-Mart launched an EPC pilot

A.K Chandramore et al, in 2014 design a vehicle system to collect tax automatically using RFID technology. The identification is possible through radio frequency and having RFID tag. It's assigned by traffic governing authority all the relevant information will be saved in the system with mention RF tag. Reader will be advantageously placed at toll collection center to operate every vehicle and update the system. In case of insufficient prepaid balance also update the owner. The system is helpful to reduced Traffic mobbing at toll plazas and fuel consumption.

Nwaji et al, 2013 develop RFID based time-attendance management system. This systems entail two main apparatuses Transponder (tag) and Interrogator (or reader), to make connection. The system contains two module such as hardware and software. The hardware consists motor unit and RFID reader. The reader is low-frequency reader which communicate to the host computer via a serial to USB converter cable. The GUI was developed in visual basic.Net the system perform to save the attendance electronically in the host computer.

K. S. Ravi et al, 2013 design a security project can provide security to industries, companies etc. The system gives information of authorized and unauthorized persons. Tangled two main component Transponder (tags) and Interrogator (reader) in the project.

Adak. M Kumar et al, 2017 the researcher work on demand based and demand is rising for secure system that must be trustworthy and rapid respond for the industries and company. RFID is one of the reliable technology but long-ago barcode's are more superior as compared to RFID cost but now a day's RFID is easily available and flexible to use. And replaced Arduino on microcontroller to make programming to understand[4].

Before RFID technology people was using different technologies achieved his distinguish goal such as; Biometric is system is developed for security purpose and it have different methods to identify the person but must be come at front of the scanner and scan the required identification method. Magnetic strip inside the card embed a magnetic strip and encode the strip for relevant person and the person will swipe the card inside a magnetic strip decoder. Barcode is known as Universal Product Code (UPC) it is 12 digits code which can assign to something and store the detail in memory with UPC. Scan the UPC and it will present all the information.

III. METHODOLOGY

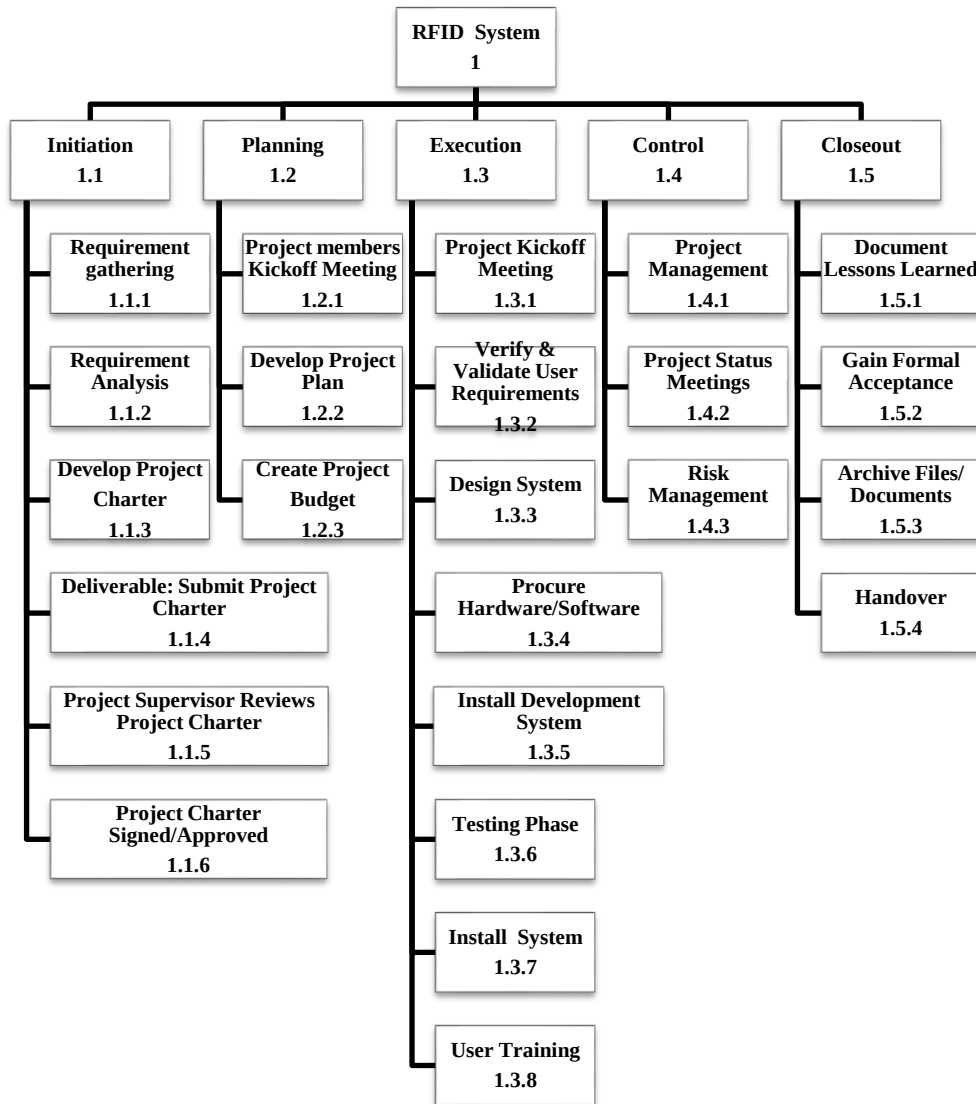


Figure 1: WBS of RFID Based Security and maintenance System.

This RFID project is depend two main modules such as; hardware and software. Hardware module is consist some important components such as; RFID Reader it can work like bridge between transponder and data center. RFID tags (transponder) is Unique identify number used for identification and communicate via RFID Reader. LCD is used to show the message. The motor unit has fixed at the entrance.

The motion sensor is used for task completion.

Software GUI Graphic User Interphase is develop in IDE Microsoft visual studio C# (C sharp) language for UI, Microsoft SQL server 2008 is used for database different modules for different category peoples and used crystal report to generate report. Arduino IDE is used to acknowledge the microcontroller. During the project development followed the software development lifespan [11].

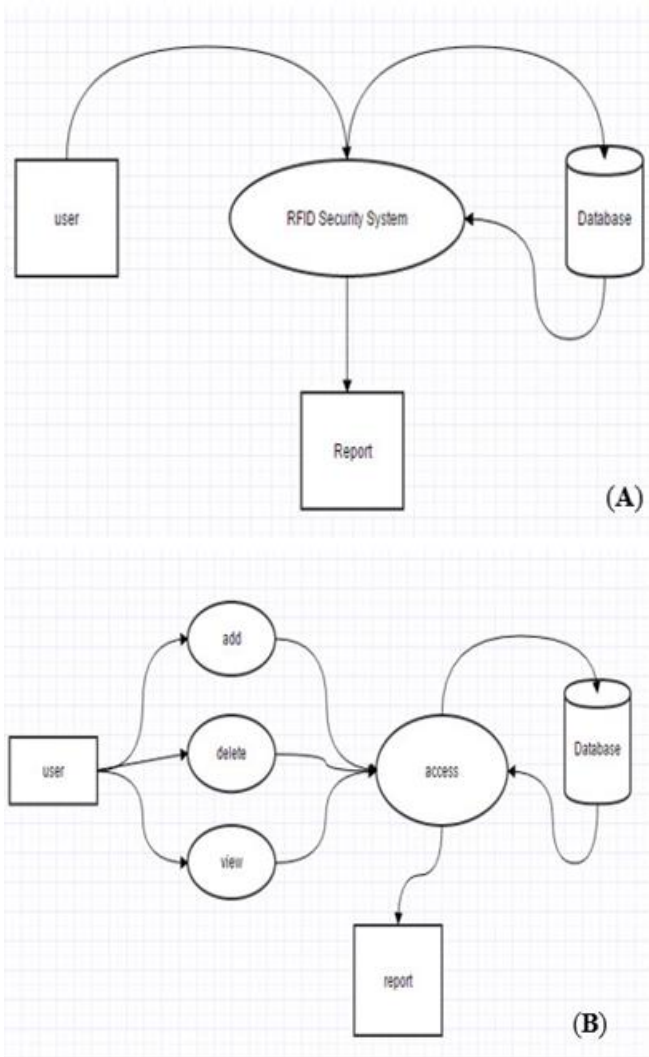


Figure 2: system implementation of (a) matching data, (b) user access privileges of software.

IV. RESULTS AND DISCUSSION

This RFID project is entail two main modules hardware and software our aim was to develop automatic authorize security system to record every activity and eliminate manual checking system. Hardware module has made from some important components such as RFID Reader we had used Arduion microcontroller it latest innovation in microcontroller world, and it is more easy to acknowledge the microcontroller because it have its own IDE. And microcontroller is working like a brain. RFID tags (transponder) is Unique identify number used for identification and communicate via RFID Reader, there have different type and shape of

tags are available for different purpose. LCD is used to show the message if the detected tag is registered in a data center then it display identified otherwise show unidentified. The servo motor unit is fixed at the entrance motor is design for angular motion and rotate in a particular angle instructed in microcontroller usually turn 90 degree but total direction is 180 degree, in case the detected object is identified it will perform the action and open the barrier otherwise remain closed. The motion sensor is used when the object is pass through then it will bring the barrier at 0 or 1 level mean the task is successful.

Software GUI Graphic User Interphase the main focus was to develop a secure system which is the easy and human understandable way to identify the authorized people and saved all the record automatically and minimize the rush at the entrance ant the system was developed for the university which have different modules such as students, employees and vehicles. Students related all information will be save in student module, employ related information will be save in employ module and vehicles related all information will be in vehicles module. For the development of software we used IDE Microsoft visual studio C# (C sharp) language for UI, Microsoft SQL server 2008 is used for database because there haven't compatibility issues too much user in the world and also reliable and flexible to make connection with hardware's. For report generating used crystal reports. "C" the hardware programing language, and Arduino IDE is used to acknowledge the microcontroller and it more easier then other interfaces.

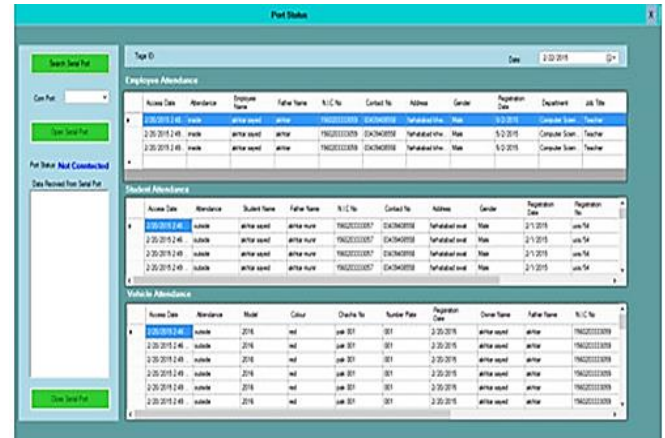
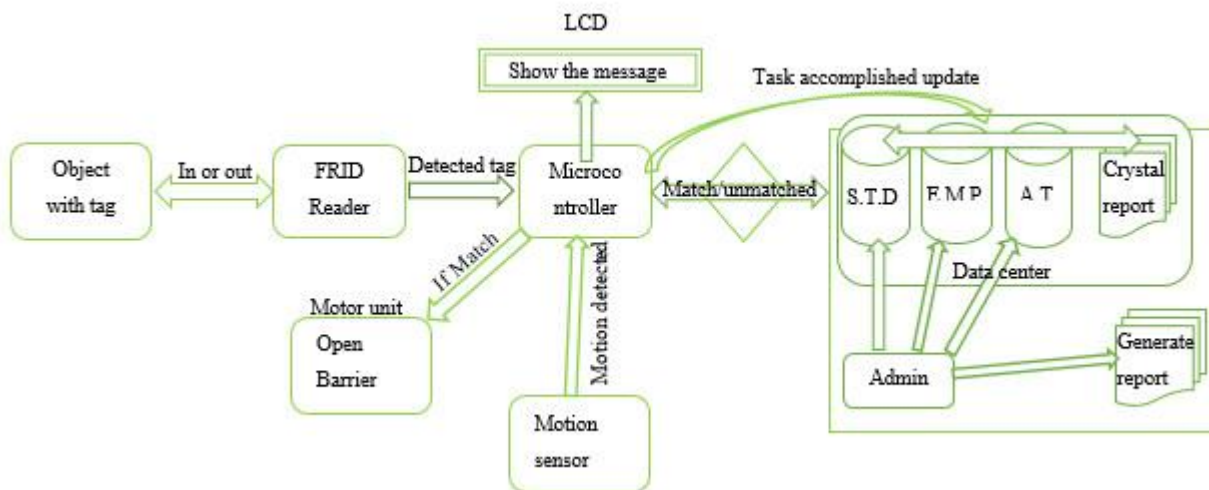


Figure 3: Different module of RFID system.

Mechanism and their Comparison



Scheme 1: diagrammatical representation of data flow.

TABLE 2. Comparison of RFID And Barcode Technology.

RFID	Barcode
It have a small microchip and antenna	Tag is much lighter and smaller
It's not too much, but affordable not expensive	Tags very cheap
multi type of tags active ,passive, semi passive	Print directly on paper, plastic or any solid material
No need to dedicated light line	Need a dedicated line and light
It's become very polar and overall best performance	In some situation it is comparatively good
50 to 70 tags read in a second, 500 to 700 % faster	Only one tag is possible to read in a second
It's have capability to work distantly up 300 fit	Only scan the code then possible to read
It will read and write device	Only readable device
Have capability for large data storing	Don't have large data capability
It will be able to reuse	Only single time able to use
High level security, password protected, encrypted and kill feature to remove all data	Easy to detect the code not too much secured

V. CONCLUSION

The objective to build a dynamic desktop automatic authorize security system to record every activity and eliminate the traditional checking and register maintenance. In recent paper, through RFID technology attain better respond as compare to other methods which is 200% faster and reliable than traditional identification method as well as normal microcontroller was replace by Arduino microcontroller. It helps to design a program by an easy method for developer because Arduino have its own IDE. Comparatively RFID technology is best selection than other such as: biometric, magnetic strip and barcode technology because its unique functionalities which is distance work, contact-less, without line-of-sight, wide-range frequency, no issue of card rubbing. Recent project reveal a strong agreement with literature survey.

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