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# RFID Based Hospital Management System

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**ABSTRACT:**In today's world, wherever beside technology, health is that the major issue for a healthy life, it additionally has become vital to administrate & manage the healthcare industry, notably maintaining the visitor track record and attendant track record has become a tedious and complicated task. In this system the entire one-time comprehensive solution is incredibly purposeful, and systematic approach for accurate control of administrative processes RFID based hospital management system.

**KEYWORDS:**RFID, Radio Frequency, Attendant.

## I. INTRODUCTION

In recent years hospitals are crowded with more visitors and attendants. For instance, for a single patient two or three attendants and many visitors are being visiting the hospital. Due to clogging there is a chance of spreading the diseases and also patient take much time to recover.

### I.I.Objective

The purpose of this project is to develop an automated visitor/attendant monitoring system for each and every room/ward in the hospital for limiting the visitors. Visitors are allowed only in the particular visiting hours. To provide a safe environment in the hospital.

## II. LITERATURE REVIEW

- [1] X. L. MENG, Z. W. SONG, AND X. Y. LI, "RFID-BASED SECURITY AUTHENTICATION SYSTEM BASED ON A NOVEL FACE-RECOGNITION STRUCTURE," IN PROC. WASE INTERNATIONAL CONFERENCE ON INFORMATION ENGINEERING, 2020, PP. 97-100.
- [2] F. LOURENCO AND C. ALMEIDA, "RFID BASED MONITORING AND ACCESS CONTROL SYSTEM", IN PROC. INFORUM, 2019.
- [3] K. S. HUANG AND S. M. TANG, "RFID APPLICATIONS STRATEGY AND DEPLOYMENT IN BIKE RENTING SYSTEM," IN PROC. ICACT 2017, PP. 660-663.
- [4] D. L. WU, WING W. Y. NG, PATRICK P. K. CHAN, H. L. DING, B. Z. JING, AND D. S. YEUNG, "ACCESS CONTROL BY RFID AND FACE RECOGNITION BASED ON NEURAL NETWORK," IN PROC. INTERNATIONAL CONFERENCE ON MACHINE LEARNING AND CYBERNETICS, JULY 11-14, 2016, PP. 675-680.

## III. EVOLUTION OF RFID

The success of RFID technology primarily centers on the arrival of radio technology. The developments in radio technology were a requirement to harness the essence of RFID technology. There is a vital growth over the past number of decades in this technology (see figure 1). RFID technology is rife in modern industries that demand data integrity and high potency of the system. This technology is employed for tracking vehicles and goods, courier services and luggage handling. Other applications embrace animal tracking, secure toll payments, inventory management systems, access control mechanisms, etc. Figure 1 depicts the evolution of RFID technology.

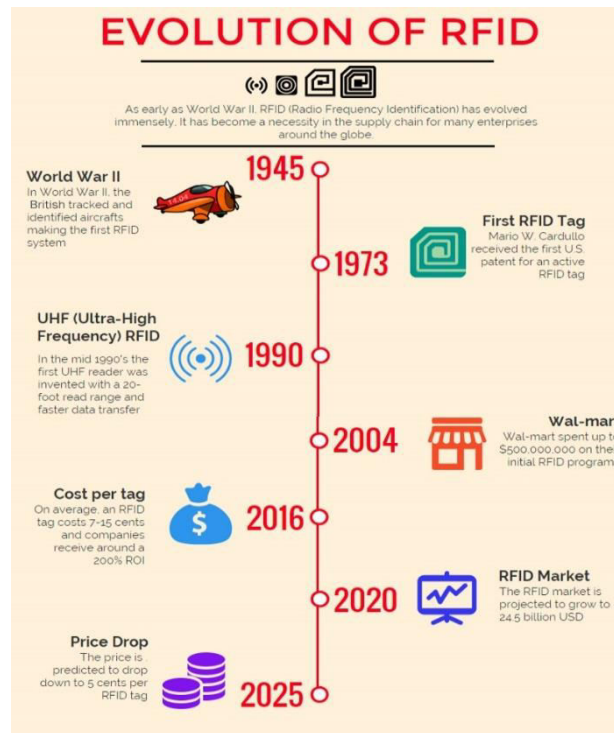


Figure 1: Evolution of RFID

### III.I. Components of an RFID System

An RFID system consists of varied elements that square measure connected to at least one another by a passionate communication path. The individual components are integrated into the system to implement the advantages of RFID solution. The list of components is as follows:

#### III.I.I. Tags

An object that is hooked up to any product and uses a unique sequence of characters to define it. It contains of a chip and the antenna.

#### III.I.II. Antenna

It is accountable for the transmission of knowledge between the reader and tag exploitation radio waves.

#### III.I.III. Reader

A scanning device that uses the antenna to comprehend the tags that are in its neck of the woods. It transmits signals at some sure frequencies.

#### III.I.IV. Middleware

It is a communication interface to interpret and process data being fed by the readers into information. It takes under consideration all relevant ports of communication and a software application to represent this information.

#### III.I.V. Backend Database

A repository of knowledge that is meant specific to the application. The database stores records of data specific to individual tags.

#### IV. BLOCK DIAGRAM

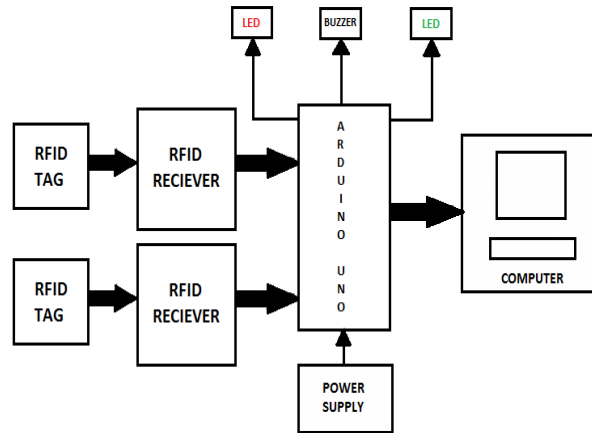


Figure 2:Block Diagram

#### V. WORKING

RFID (Radio Frequency Identification) tag serves as a unique identification card for each visitor and attendant. A visitor or attendant places his identification card in the proximity of RFID reader which detects the unique ID. Details of the visitor/attendant are stored in a database. This data can be used to record and maintain the timing of the visitor/attendant visiting the hospital. If any unauthenticated card is identified, a alert message is passed to the management.

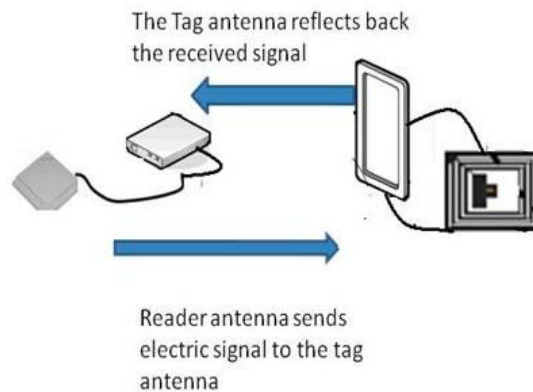


Figure 3: Working of RFID

- Unique ID is stored in the RFID tag electronically.

**Ex. Unique ID: 991142825.**

- The tag's antenna receives energy from an RFID reader antenna. Using power from its internal battery or the reader, the tag sends radio waves (electromagnetic waves) back to the reader. The reader picks up the tag's radio waves and interprets the frequencies as data. The RFID receiver sends the data (Unique ID) to the microcontroller (Arduino UNO). Here, the received data from the RFID and the data in microcontroller is verified.

**Ex. Received data: 991142825,**

**Data in Microcontroller: 991142825.**

- If it is an authenticated user, the data will be stored in database else it passes the message to the management as unauthorized user. In order to send data serially from the Arduino board to Excel using PLX-DAQ (Parallax Data Acquisition tool).

**V.I. CIRCUIT DIAGRAM**

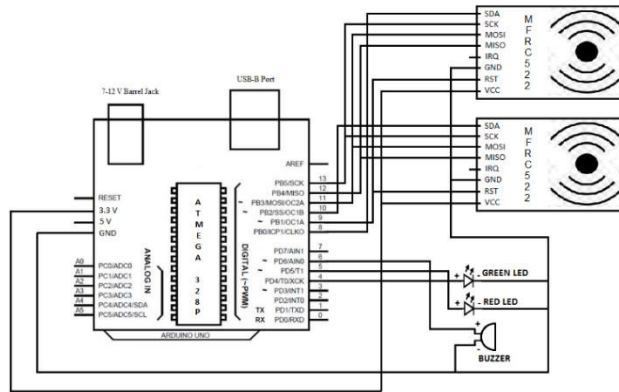


Figure 4: Circuit Diagram

**VI. OUTPUT**

When the Setup is turned on, the RFID reader which is placed at the entry of the hospital and also at the entry of the each room starts reading the data. The person should bring his/her unique card near to the RFID receiver. Then the RFID receiver reads the data from the card and the data is sent to the arduino now, the arduino compare the received data with the data already stored in the microcontroller. If the received data is matched with the authorized data then the Green LED is enabled and his/her entry or exit time is stored. If it is not matched then the Red LED and Buzzer is enabled. People should scan their RFID tag each time at entry or exit of the hospital. The same conditions should be followed while entering into the room also. i.e., RFID tag issued at the entry of the hospital is used to enter into any room in the hospital, while entering it is mandatory to scan the RFID. If a person try to scan a unauthorized card then the Buzzer will be enabled.

**VI.I. Hardware Output**

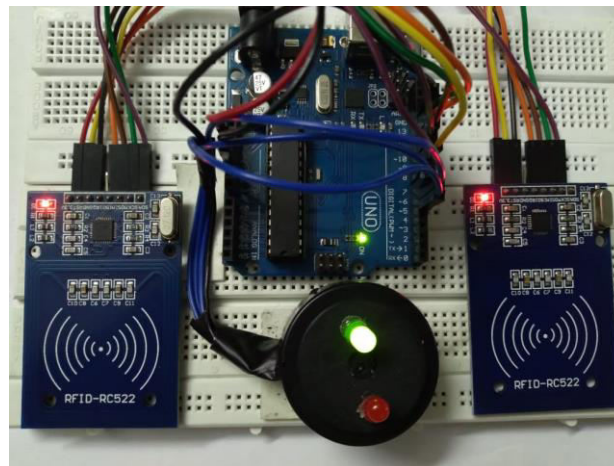


Figure 5: Hardware Output

## VI.II. Tabulation Output

ID	Date	Name	Card ID	Status	Reception Time IN/OUT	Room 1 Time IN/OUT
1	15-07-2021	Attender	991142825	Entry	2:29:02 PM	
2	15-07-2021	Visitor 1	354112026	Entry	2:29:06 PM	
3	15-07-2021	Attender	991142825	Entry in R1		2:29:08 PM
4	15-07-2021	Visitor 2	1155512126	Entry	2:29:12 PM	
5	15-07-2021	Visitor 1	354112026	Entry in R1		2:29:15 PM
6	15-07-2021	Visitor 3	2114013226	Entry	2:29:17 PM	
7	15-07-2021	Visitor 4	19521718824	Entry	2:29:22 PM	
8	15-07-2021	Visitor 2	1155512126	Entry in R1		2:29:24 PM
9	15-07-2021	Visitor 5	35214526	Entry	2:29:27 PM	
10	15-07-2021	Visitor 4	19521718824	Entry in R1		2:29:32 PM
11	15-07-2021	Attender	991142825	Exit from R1		2:29:36 PM
12	15-07-2021	Visitor 5	35214526	Entry in R1		2:29:42 PM
13	15-07-2021	Attender	991142825	Exit	2:29:47 PM	
14	15-07-2021	Visitor 3	2114013226	Entry in R1		2:29:52 PM
15	15-07-2021	Visitor 1	354112026	Exit from R1		2:30:15 PM
16	15-07-2021	Visitor 2	1155512126	Exit from R1		2:30:24 PM
17	15-07-2021	Attender	991142825	Entry	2:30:28 PM	
18	15-07-2021	Visitor 2	1155512126	Exit	2:30:37 PM	
19	15-07-2021	Visitor 4	19521718824	Exit from R1		2:30:41 PM
20	15-07-2021	Attender	991142825	Entry in R1		2:30:45 PM
21	15-07-2021	Visitor 4	19521718824	Exit	2:30:49 PM	
22	15-07-2021	Visitor 5	35214526	Exit from R1		2:30:51 PM
23	15-07-2021	Visitor 1	354112026	Exit	2:30:59 PM	
24	15-07-2021	Visitor 5	35214526	Exit	2:31:06 PM	
25	15-07-2021	Attender	991142825	Exit from R1		2:31:11 PM
26	15-07-2021	Visitor 3	2114013226	Exit from R1		2:31:26 PM
27	15-07-2021	Attender	991142825	Exit	2:31:29 PM	
28	15-07-2021	Visitor 3	2114013226	Exit	2:31:32 PM	

Figure 6: Tabulation Output

## VII. RESULT AND CONCLUSION

At first visitor/attendant scan their RFID tag in hospital entry, the entry status and time will be updated in the Reception Time In/Out field. Then the user scan their tag while entering into a particular room/ward, the entry in room status and time will be updated in the Room Time In/Out field. The same status and time will be scanned and updated, while getting outside from the room and hospital. In this project Hospital Management System using RFID is implemented. It is cost efficient, low in power consumption, compact in size and standalone system to monitor the visitors and attender visiting the hospital. To provide a safe environment in the hospital.

## VIII. FUTURE ENHANCEMENT

Automatic RFID Tag distribution by checking the people is carouser or not, if not scan their ID proof and need to enter the room/ward number. If they try to enter into some other room/ward, the information passed to management.

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