

SMART CAMPUS USING RFID

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Abstract:

The record of student attendance in most universities is done by calling the roll. This kind of calling is not only waste of class time, but also cannot be a true reflection of the real student attendance. The use of an alternative new system is becoming a mandate to manage students and staff attendance. The Radio Frequency Identification is the technology which will be applied as infrastructure in the indoor environment to enable the college administration to get the advantages and to improve the university's monitoring framework, taking into considerations some factors such as time saving, reliability, efficient and easy to control. This system initially uses a web-based database coupled with RFID tagging system which acquire a framework with which the majority of the data may be manipulated.

Keywords — RFID, Wi-Fi, ELA816B, UHF, IR sensor

I. INTRODUCTION

A Smart Campus system will allow student to automate all work student want to do on regular basis using one card with the help of IoT. Smart Campus is a central system that can control and create communication between nearly all aspects of student access in campus. One of the highlights about smart campus system is it can be tailored to student lifestyle regarding with campus. Here are four of the **strongest benefits** Smart campus will provide for students which includes Decrease students extra work and also waste of time. It improves student's campus security. It is very convenient to use. It will improve the comfort of student's presence in campus. Digital Campus

Design is a modern technology that modifies the student campus structure to perform different works using one card instead of using various cards or papers or documents. While smart digital campus system is the central idea that makes smart campus design possible. Digital campus automation technology is new concept which is hybrid concept of many different systems, whose demand may increase in a wide range in a future. There are many factors that are responsible for the need of digitalization in campus to make campus "Digital and Smart".

II. PROPOSED SYSTEM

The main goal of this project is to automate the whole system of student's/lecturer's attendance and tracking by using the RFID technology, also lecture table and marks table for all students can be obtained using the website. The components of the proposed system are readers (ELA816B), passive tags and client-server applications program to connect RFID devices to main database to deal with the enormous information gotten from RFID readers in real time what's more, make use of the availability of web services that uses the same database system as a common source of information.

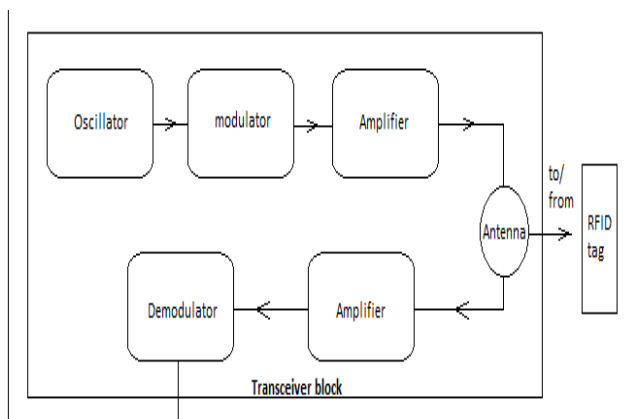


Fig.2.1. Block diagram RFID

The students, lecturers are given one of a kind RFID recognizable proof cards which contain embedded tags to empower the readers to identify them as they pass through the reader interrogation field. These readers are installed in all departments, offices, classrooms, laboratories or any other possible locations to be reached within the university campus. The proposed design can be divided in two groups. The first group consists of server for RFID, database and a web service. The RFID readers are connected to RFID server which represents the host computer and it is responsible for establishing communication with readers, handling and managing the received data from readers in real time. Once it receives the read data, and providing the latter is correct, this server inserts a new attendance record in the database Server. The database Server stores and handles all the information related to the university such as basic information, attendance-absence, student's marks table and also RFID readers information.

III. LITERATURE SURVEY

The utilization rate for existing electronic attendance systems is low. Because it couldn't solve the problems that occur by special conditions of university such as proxy attendance, traffic during attendance check-in, and attendees departure at intermission. The most important problems are not the authentication problems or errors on the technical issues. Instead, issues are related to attempts to check attendance simultaneously by a number of students, failure to prevent proxy attendance, and the uncertainties of students remaining in the classroom following check-in. [1].

In this paper, for the problem, a system is proposed, a campus intelligent safety supervision system based on RFID technology. Through the use of RFID technology for non-contact automatic presence recognition features, the system achieves the goal of supervising the college gate, classroom, danger zone entrance and other places in the college. The information is automatically acquired and transmitted in real time, which makes the supervision and management of the school more intelligent. [2].

Even though the smart campus market has not taken off yet, there is an enormous research that is going on now all over the world to explore such technology. Several factors are driving investigators to study smart campus including: deliver high quality services, protect the environment, and save cost. In this paper, not only we explore the research conducted in this area, but we also investigate challenges and provide possible research opportunities regarding smart campus. [3].

Emerging technology of RFID can be used for building a smart university. Prototype is developed considering major use cases involved in a smart university. The system is taking care of maintaining attendance record, switching control of electrical items and security locks of rooms. Results show that consumption of energy and object tracking time is decreased while security of rooms and credibility of attendance record are increased. [4].

An effort is made to solve regular attendance monitoring problem in developing countries using RFID technology. The application of RFID to student attendance monitoring as developed and deployed in this study is capable of eliminating time wasted during manual collection of attendance and an opportunity for the educational administrators to capture face-to-face classroom data for allocation of proper attendance scores and for further managerial decisions. [5].

Valuable time of student as well as faculty is wasted. Also, accurate attendance is not taken by faculty and proxy attendance is always a problem in many educational institute. By using RFID system we are able to eliminate wastage of time. By this system we can precisely monitor on identification of person who enter the college gate or inside college. Thus this system satisfies our aim of automatic attendance and college access using RFID. The students and faculty members should have their respective smart card. The system works on scanning the RFID card which is read by the reader and the information is tallied and updated in the database. This system results in more convenience, safety and efficiency to educational institute. [6].

Development of smart campus using Internet of Things (IoT) technology. Through smart campus, it is possible that a campus is connected via online by the external entity, so that the teaching approach based on technology can be conducted in real time. [7].

In day-to-day lives there are different types of identification system are present For the detection of Animals, students, products and also for transportation. The system like barcode system, Smart-card and Bio-metric technology are present. As compare to them RFID is faster than barcode and smart card system and cheaper than bio-metric system, hence we preferred to the RFID for our Project. Our project is Smart Attendance System using RFID. In this we are using RFID reader and passive RFID chips. Reader is located on fixed location sends signal to passive RFID chip detected in range of reader. Chip re-transmits the

acknowledgement signal with its unique Identifier code, hence chip is identified. Also, a single reader can identify many number of chips in very short period of time. So, we are using these properties of RFID reader and tag to monitor the student. [8].

At present, with the increasingly growing application of Internet of Things, virtualization and intelligent technologies, and the maturity of smart campus systems, campus card technology based on radio frequency identification (RFID) has developed rapidly. Due to the convenience of use, it is widely used in dormitory access control system, book borrowing system, attendance system, payment system, etc. Because the data carried by the RFID card is more and more complex, the requirements for its security are getting higher and higher. [9].

Implementation Of Smart College Using Embedded System. As we know that the demand of current era is "DIGITISATION" so we focus on technical basis in a innovative way of making campus digitized. The major aim of project is to ease the hectic schedule of student, faculty and administration department by using iot system. The basic idea is to have three systems namely account section, library section & attendance section. A Digital Campus system will allow student to automate all work student want to do on regular basis using one card.with the help of IoT, we develop Smartphone application on android phone to monitor and record all the data. [10].

Attendance is an important factor in any organizations. It is now becoming more complex due to manual work and evolution of systems like barcode reader, biometric sensor, smart card etc. Comparing with RFID (Radio Frequency Identification) based attendance system they are time consuming and complex process. RFID plays a major role in the management of attendance using UHF (Ultra High Frequency) RFID reader with IR sensor and passive tags without dealing with any queues and delay. It also provide location mapping of each moving entity in the organizations .The main work of proposed system is implementation of passive RFID tag to each moving entity in

organization and sensing it by using UHF RFID reader for attendance management and live location spotting of that moving entity in organization. [11].

Today in most institution professors take attendance by calling out names or passing a sheet of paper. Both way have respective drawbacks. For this reason college needs to create a system to monitor students attendance and report it to their parents automatically and it also gives report about their test marks through SMS process. This project is to simplify attendance recorder system by using RFID. [12]

IV. COMPARATIVE ANALYSIS

In the previous survey papers mentioned student attendance is either completely manual or it is done through biometric system. Since it is manually done storing the data of the student is also by manual methods. The surveillance is done by manual methods.

Drawbacks :

- The surveillance is done manually, which may majority of the times put up errors.
- The current student attendance system uses manual methods through which the faults are rised most of the times.
- These systems that involve manual methods cannot be considered authentic, for malpractices can take place by this method.

Advantages of the proposed system over the previous observations:

- The attendance system is automated, and hence considered to be the most reliable source of data to maintain the records.
- This system adds on to be a time efficient system.
- By using this RFID technique, the attendance and the surveillance are all made paper-less.
- More accuracy can be observed by this method.

V. CONCLUSION

The RFID based smart attendance system is more secure and reliable and fast responded. RFID

technology provides tactical and better comfort and also promises an increased effectiveness and improves efficiency. RFID system can be implemented in real time application for attendance recording purpose.

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