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Student Attendance using RFID System

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Abstract: *An RFID-based attendance system leverages radio frequency identification technology to streamline and automate the process of tracking attendance in various settings, such as schools, workplaces, and events. This system utilizes RFID tags, which are small electronic devices containing unique identification codes, embedded in cards or badges assigned to individuals. When a person with an RFID-enabled badge enters a designated area, RFID readers detect their presence by wirelessly communicating with the tags. This information is then transmitted to a central database or software system, where attendance records are automatically updated in real-time. Compared to traditional methods like manual entry or barcode scanning, RFID-based systems offer greater efficiency, accuracy, and convenience, reducing administrative burden and eliminating possibilities of human error. Additionally, they provide valuable data insights for monitoring attendance patterns, enhancing security, and optimizing resource allocation.*

Keywords: Attendance system, Radio frequency identification technology, SD Card

I. INTRODUCTION

The introduction of an RFID-based attendance system revolutionizes the way organizations manage and monitor attendance. By harnessing Radio Frequency Identification (RFID) technology, this system offers a modern and efficient approach to tracking attendance across various sectors, from educational institutions to corporate offices and beyond.

At its core, RFID technology employs small electronic tags or badges embedded with unique identification codes. These tags communicate wirelessly with RFID readers placed strategically at entry points or designated areas. When an individual carrying an RFID-enabled badge enters the vicinity of a reader, the device instantly detects their presence, transmitting this information to a central database or software platform.

This seamless process eliminates the need for manual attendance recording, barcode scanning, or traditional paper-based methods, thereby significantly reducing administrative overhead and the potential for errors. Moreover, RFID-based attendance systems operate in real-time, providing instant updates and accurate attendance records.

Beyond its practical applications, the RFID-based attendance system offers a myriad of benefits. It enhances security by ensuring only authorized individuals can access specific areas, thus safeguarding sensitive locations and resources. Additionally, it facilitates data-driven insights into attendance patterns, enabling organizations to optimize staffing levels, identify trends, and allocate resources effectively.

In essence, the introduction of an RFID-based attendance system marks a pivotal shift towards modernizing attendance management, offering unparalleled efficiency, accuracy, and convenience for organizations seeking to streamline their operations and enhance productivity.

II. LITERATURE SURVEY

1.TITLE : VIRE: Active RFID-based Localization Using Virtual Reference Elimination
AUTHORS: Yiyang Zhao; Yunhao Liu; Lionel M. Ni
Published in: 2007 International Conference on Parallel Processing (ICPP 2007)
SUMMARY
The growing popularity of RFID technologies, particularly in applications requiring localization. It highlights LANDMARC as the pioneering approach using active RFID for indoor location sensing but acknowledges two key limitations: poor performance in areas with radio signal multi-path effects and the need for costly additional reference

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tags, potentially causing RF interference. To address these issues, the proposed VIRE approach introduces virtual reference tags, maintaining a proximity map at each reader. An elimination algorithm is then applied to refine location estimation, resulting in consistent precision enhancements ranging from 17 to 73 percent compared to the LANDMARC method across various environments and tag locations.

2.TITLE : Attendance and Information System using RFID and Web-Based Application for
Academic Sector.
AUTHORS: Hasanein D. Rjeib. Nabeel Salih Ali, Ali Al Farawn, Basheer Al-Sadawi,Haider Alsharqi.
PUBLISHED IN : Article in International Journal of Advanced Computer Science and
Applications & January 2018

SUMMARY :
A student attendance and information system are designed and implemented to manage student's data and provide capabilities for tracking student attendance, grading student marks, giving information about timetable, lecture time, room number, and other student-related information. Also, the proposed system provides easiness for the staff where there is no need for extra paper works and additional lockers for saving data.
Research Gap: Much complicated being web-based application. Only students' data is involved, can be used for other staffs and faculties.

3.TITLE : A RFID based (IoT) automatic attendance system: A survey analysis.
AUTHORS: RKAR. Kariapper1, MS. Suhail Razeeth.
PUBLISHED IN : Southeastern University of Sri Lanka, Oluvil& April 2019.
SUMMARY :
Radio Frequency Identification (RFID) is a very advanced technology for automatic attendance system, and it provide very higher accuracy and speed than atraditional paper-based system. And it says that RFID is a best replacement of traditional method without any doubt.
Research Gap: Eventually from this study I got to know that each system we has its own advantages and disadvantages. Some characteristics are good for some system, and some are not. To overcome this, a hybrid model is necessary, and which merely provide higher efficient system without any disadvantage.

4.TITLE : A New Model of The Student Attendance Monitoring System Using RFID Technology
AUTHORS: Mutammimul Ula, Angga Pratama, Yuli Asbar, Wahyu Fuadi, RiyadhulFajri, Richki Hardi
PUBLISHED IN : Journal of Physics: Conference Series CSINTESA 2019
SUMMARY :
With the student attendance system using RFID technology, the management ofthe inputted data, and the archive of reports that often occur file loss no longer occurs
because it has been stored in a database. With the student attendance system using RFID technology.
Research Gap: Beneficial for other staffs also, high maintenance and cost implementation.

5.TITLE : Fully Automated Classroom Attendance System.
AUTHORS: Eid Al Hajri, Farrukh Hafeez, Ameer Azhar N V.
PUBLISHED: International Journal of Interactive Mobile Technologies, & August 2019.
SUMMARY:
The implemented system offers number of befits over traditional system includes freedom of delivering lecture with full focus without notifying student timing. As it is fully automated, the chance of error in the attendance entry is NIL. Fully Automated Classroom Attendance System metric identification make system invincible.
Research Gap: Biometric identification can be installed; RFID reader range can be increased by replacing high range RFID reader.

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III. METHODOLOGY

The methodology for an RFID-based student monitoring attendance system involves several key components. Firstly, each student is assigned a unique RFID tag containing identification information. RFID readers are strategically placed at entry points throughout the school or classroom. When students enter these areas, their RFID tags are scanned, capturing their attendance data in real-time. This data is then processed and stored securely in a centralized database or system. Teachers and administrators can access attendance records through a user-friendly interface, allowing for easy monitoring and management. Additionally, the system may be integrated with other school management software for seamless operation. Data analysis tools enable stakeholders to identify attendance patterns and trends, facilitating informed decision-making. Measures are implemented to ensure the security and privacy of student information, including encryption and access controls. Overall, this methodology provides a reliable and efficient solution for monitoring student attendance in educational settings.

IV. CONCLUSION

The system is a low cost system which is designed to withstand any terrain and surrounding, providing tactical and surveillance and better comfort. Moreover, the Arduino board allows the system install in more simple way. RFID technology positively promises an increased effectiveness and improved efficiency for business and administrative processes. All the future work is expected without spend extra cost, even one cent from the current system.

V. FUTURE RESEARCH DIRECTION

This study is considered the basic phase for several future types of research and the following operations can be carried out to improve the performance of this algorithm:

- Make a wireless connection between Arduino and pc
- Design an online database attendance system
- Add another input like a fingerprint

REFERENCES

[1] S. Abdinia, A. H. M. van Roermund, and E. Cantatore, “RFID Tag,” 2015, pp. 113– 121.
[2] RF-ID, “RFID & Reader,” RF-ID website, 2009. [Online]. Available: http://www.rfid. com/3rfid869/nordicuhf.html. [Accessed: 09-Mar-2019].
[3] A. A. Olanipekun and O. K. Boyinbode, “A RFID based automatic attendance system in educational institutions of Nigeria,” Int. J. Smart Home, vol. 9, no. 12, pp. 65–74, 2015.
[4] H. D., N. Salih, A. Al, B. Al-Sadawi, and H. Alsharqi, “Attendance and Information System using RFID and Web-Based Application for Academic Sector,” Int. J. Adv. Computer. Sci. Appl., vol. 9, no. 1, pp. 266– 274, 2018.
[5] P. S. S. Srivignessh and M. Bhaskar, “RFID and pose invariant face verification based automated classroom attendance system,” in International Conference on Microelectronics, Computing and Communication, MicroCom 2016, 2016.
[6] M. M. M. Thein, C. M. Nwe, and H. M. Tun, “Students ’ Attendance Management System Based On RFID And Fingerprint Reader,” Int. J. Sci. Technol. Res., 2015.
[7] Y. Mishra, G. K. Marwah, and S. Verma, “Arduino Based Smart RFID Security and Attendance System with Audio Acknowledgement,” vol. 4, no. 01, pp. 363–367, 2015.
[8] A. K. Shukla, “Microcontroller Based Attendance System Using RFID and GSM,” vol. 5, no. 8, pp. 127– 131, 2017.
[9] S. Konatham, B. S. Chalasani, N. Kulkarni, and T. El Taeib, “Attendance generating system using RFID and GSM,” in 2016 IEEE Long Island Systems, Applications and Technology Conference, LISAT 2016, 2016, pp. 3–5.
[10] R. Roy, “A web enabled secured system designed for attendance monitoring applying biometric and Radio Frequency Identification (RFID) technology,” in 2014 International Conference on Signal Propagation and Computer Technology, ICSPCT 2014, 2014, pp. 653–657.