



RFID based Intimation to the Authority and Monitoring System Based IOT

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KEYWORDS

RTC (Real Time Clock), Internet of Things, Regulated power supply, Attendance

ABSTRACT

The Intimating System is an application primarily designed to monitor faculty attendance in real time. Timely faculty presence in the classroom is essential for the smooth functioning of an educational institution. However, it is often challenging for higher authorities like the Head of Department (HOD) to keep track of faculty attendance across all sections and classes. To address this issue, our project proposes a solution that utilizes RTC (Real-Time Clock) RFID (Radio Frequency Identification) technologies. This system helps identify which faculty members are attending their scheduled classes on time, enabling better class management and adjustments when necessary. Additionally, an IR sensor-based in/out people counting module is integrated to monitor student movement in and out of the classroom. This helps maintain discipline among both faculty and students, ultimately contributing to the overall success and efficiency of the institution.

I. INTRODUCTION

In the present era of digital transformation, educational institutions are increasingly adopting smart technologies to enhance operational efficiency, transparency, and discipline. One of the most critical aspects of academic management is ensuring timely faculty attendance and effective classroom monitoring. Faculty punctuality directly impacts the academic schedule, student engagement, and overall institutional performance. However, in large institutions with multiple departments, sections, and classrooms, it becomes a

challenging task for higher authorities such as the Head of Department (HOD) or Principal to manually monitor faculty presence and classroom activities in real time. Traditional attendance systems are often paper-based or semi-automated, making them prone to errors, manipulation, and delays in reporting. These limitations necessitate the development of an intelligent, automated, and real-time monitoring system that can efficiently track faculty attendance and classroom occupancy. The proposed to address these challenges by integrating modern technologies such as **Radio Frequency**

Identification (RFID), Real-Time Clock (RTC), Infrared (IR) sensors, and Internet of Things (IoT). The core objective of this system is to automate faculty attendance tracking, provide real-time updates to authorities, and monitor student movement within classrooms. By leveraging IoT, the system ensures seamless communication between classroom-level hardware modules and centralized monitoring platforms, enabling timely decision-making and effective academic management. RFID technology plays a vital role in the proposed system. Each faculty member is assigned a unique RFID tag that contains a distinct identification code. When a faculty member enters the classroom, they are required to scan their RFID card using an RFID reader installed at the classroom entrance. The system immediately captures the faculty ID along with the exact date and time using an RTC module. This data is processed by a microcontroller and transmitted to the server or cloud platform through an IoT communication module. As a result, higher authorities can instantly verify whether the concerned faculty member has arrived on time for the scheduled class. This real-time intimation eliminates the dependency on manual attendance registers and significantly reduces administrative workload.

Traditional attendance systems often rely on manual recording, which is time-consuming, prone to errors, and vulnerable to manipulation, such as proxy attendance. To overcome these challenges, the proposed system utilizes RFID technology, allowing faculty members to instantly register their presence by scanning RFID tags upon entering the classroom. This information is transmitted through an IoT-enabled platform, which updates attendance records in real time, ensuring accuracy and efficiency. In cases where a faculty member is delayed or absent, the system automatically sends notifications to the Head of Department (HOD) or academic coordinator, allowing them to make immediate alternative arrangements, thereby minimizing loss of instructional time and maintaining smooth classroom operations. Beyond tracking faculty attendance, the system also promotes **discipline and accountability** among students, as the presence of IoT-enabled monitoring devices encourages them to remain in class during scheduled lecture hours. The automated logging of attendance records eliminates the possibility of manual tampering, ensuring transparency

and providing verifiable evidence for institutional audits or accreditation processes.

2. LITERATURE SURVEY

A Research Gate study (2024) introduced the integration of motion sensors with RFID for enhanced attendance accuracy in smart campuses. An IR-based IoT attendance monitoring system proposed in 2024 focused on presence detection to improve tracking accuracy in classrooms. Another study (2019) presented a UHF RFID-based classroom attendance system with a web application, significantly reducing manual attendance procedures.

Indoor occupancy modelling research by various authors (2022) utilized environmental sensors and machine learning techniques to estimate classroom occupancy, complementing RFID-based attendance systems. An IR and GSM-based attendance monitoring system proposed in 2021 enabled remote alerts and real-time reporting to academic authorities. A comprehensive review in 2023 analyzed smart student monitoring systems and highlighted the effectiveness of RFID-based automation in educational environments. Further research by Soni et al. (2025) emphasized cloud analytics for RFID attendance systems, providing actionable insights for administrators. A study in 2022 explored IoT-based IR people-counting systems to monitor in/out movement, enhancing classroom discipline and occupancy control. Finally, a hybrid RFID and IoT system review (2025) concluded that integrating multiple sensors and IoT protocols significantly improves scalability, reliability, and real-time monitoring in smart educational institutions.

3. PROPOSED SYSTEM

The proposed system automates faculty attendance and classroom monitoring using RFID, IoT, and sensor technologies. Each faculty member uses an RFID tag, and attendance is recorded with accurate time and date using an RTC module. The microcontroller processes this data and sends it to a cloud platform for real-time monitoring.

Authorities like HODs can track faculty presence, punctuality, and class activities remotely. An IR sensor-based system counts students entering and leaving the classroom to monitor occupancy. The system generates alerts for faculty absence, delays, or unusual classroom activity.

All data is securely stored in the cloud for easy access and long-term record maintenance. It reduces manual errors, prevents proxy attendance, and improves transparency.

3.1 BLOCK DIAGRAM

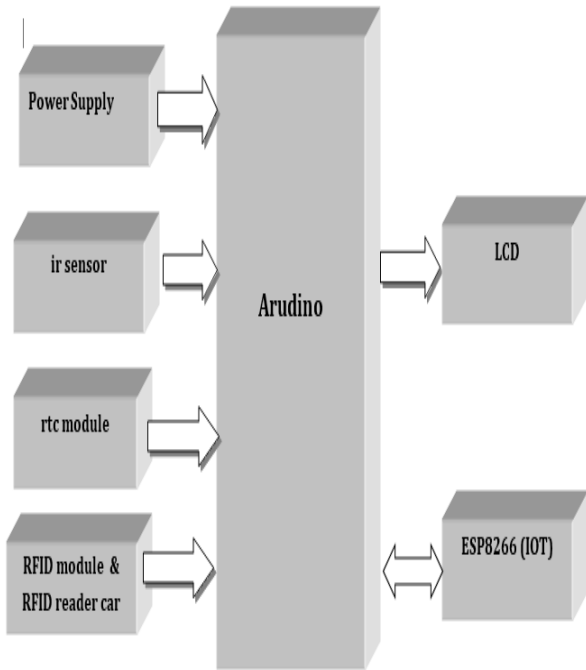


Fig 1: Proposed System

The system is scalable and can be implemented across multiple classrooms or campuses. Future enhancements include AI-based analytics, mobile notifications, and biometric or facial recognition integration.

3.2 Flow chart

The RFID-Based Intimation and Monitoring System starts with faculty scanning their RFID card at the classroom entrance. The Arduino verifies the ID using the stored database and logs attendance with time and date from the RTC module. An IR sensor simultaneously tracks student movement to monitor classroom occupancy. Attendance and occupancy data are displayed on an LCD and transmitted via the ESP8266 IoT module to a centralized cloud platform, allowing authorities to monitor remotely. Automated alerts are triggered for delays or absences, ensuring real-time, accurate monitoring and prompt action.

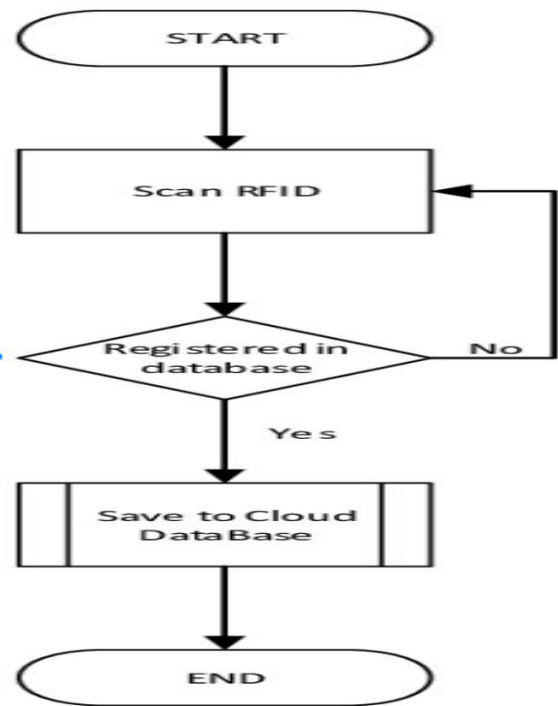


Fig 2:Flow Chart

4. RESULTS AND DISCUSSION

The RFID-based intimation and monitoring system effectively detected authorized and unauthorized tags with high accuracy, enabling real-time identification and data transmission. It improved security and operational efficiency by generating instant alerts and providing continuous monitoring through an IoT platform. Overall, the system proved to be reliable, scalable, and suitable for smart parking and access control applications.

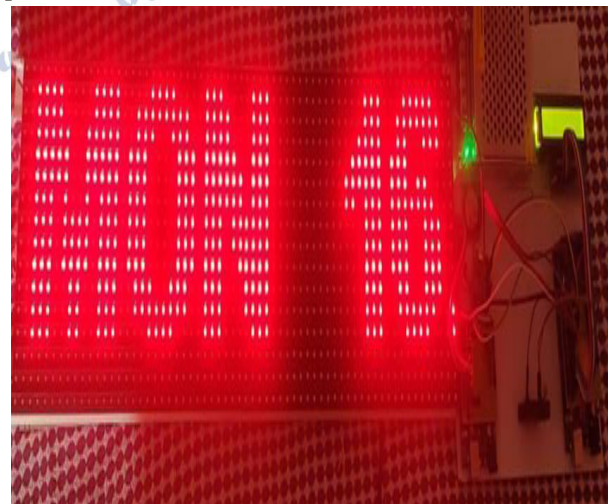


Fig 3: Hardware Implementation

The RFID-based IoT system automates faculty attendance by identifying individuals using unique RFID cards with accurate time tracking. It ensures real-time monitoring, reduces manual errors, and improves transparency.



Fig 4: LCD Display Showing Date and Time Information
This figure shows the LCD display module that provides real-time information such as date, time, and system status using the RTC module. When an RFID card is scanned, the system verifies the data and records attendance. The LCD then displays confirmation, making the system user-friendly and efficient for monitoring.



Fig 5: Facility Monitoring

The system uses RFID technology to automatically monitor faculty attendance in real time, reducing errors and delays associated with manual methods. Each faculty member is identified through a unique RFID card, and attendance is recorded with date and time using an RTC module. This ensures accurate, transparent, and efficient attendance tracking.

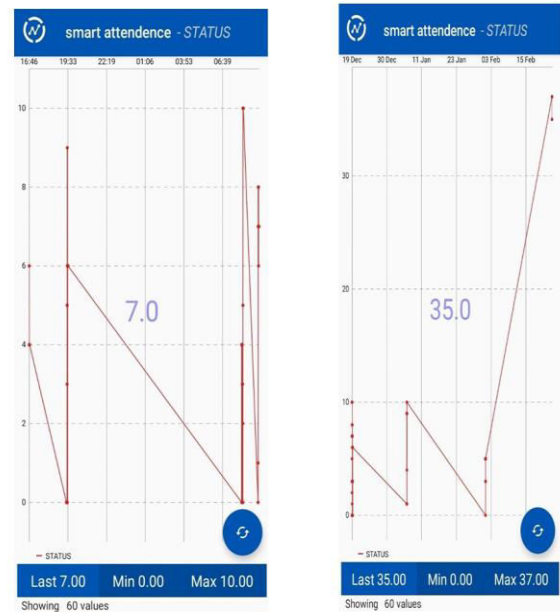


Fig 6: Updated Information Thing View App through IoT

The updated faculty attendance information is displayed in the Thing View app through IoT integration. It allows real-time monitoring of attendance data collected from the RFID system. This ensures easy access, transparency, and efficient tracking of faculty presence from anywhere.

5. CONCLUSION

The RFID Based Intimation to the Authority and Monitoring System using IoT provides an effective and reliable solution for real-time faculty attendance tracking and classroom monitoring. By integrating RFID technology with RTC, Arduino, and IoT communication modules, the system automates attendance recording while ensuring accuracy, transparency, and accountability. The real-time intimation feature enables higher authorities to monitor faculty punctuality and classroom status instantly, thereby minimizing class disruptions and improving academic management. Additionally, the the proposed system reduces manual effort, eliminates attendance manipulation, and contributes to the development of a smart and efficient educational environment.

FUTURE SCOPE

In the future, the system can be enhanced by integrating IR sensor-based student counting to monitor classroom occupancy in real time. This addition will help track the number of students entering and leaving, improving attendance accuracy and classroom management. It can also enable better analysis of student participation and

optimize resource utilization. Further integration with IoT analytics can provide detailed insights for smarter academic planning.

Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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