RFID Attendance System

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Abstract*: The RFID-Based Smart Attendance System is designed to automate attendance tracking using RFID technology, ESP8266 (NodeMCU), and Firebase Realtime Database. Traditional attendance methods, such as manual registers and biometric systems, are often time-consuming, prone to errors, and inefficient in large institutions. This system provides a fast, contactless, and automated alternative by utilizing RFID cards, which are assigned to users. When a user scans their RFID card using an RFID RC522 reader, the system retrieves the unique identification number (UID) and processes the attendance status. The ESP8266 microcontroller sends this data to Firebase Realtime Database, which stores attendance logs in real time. A web-based dashboard then retrieves and displays this data dynamically, enabling administrators to monitor attendance, sort records, and export data effortlessly.*

The system offers seamless integration, real-time synchronization, and cloud-based storage, making it a reliable solution for schools, offices, and organizations. By eliminating manual errors and reducing administrative workload, it enhances accuracy, security, and efficiency. The contactless operation ensures better hygiene and safety, especially in post- pandemic scenarios where minimizing physical contact is essential. Additionally, the system supports multiple RFID cards without requiring code modifications, allowing scalability for large institutions. This smart, IoT-driven attendance system is a cost-effective, efficient, and modern alternative to traditional attendance tracking methods

Keywords: RFID Attendance System, ESP8266 NodeMCU, Firebase Realtime Database, Automated Attendance Tracking, IoT-Based Attendance System, Contactless Attendance Technology, RFID Card Scanning, Smart Attendance Management, Web-Based Attendance Monitoring, Real-Time Data Synchronization

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655