# SMART ATTENDENCE SYSTEM USING RFID SENSOR WITH ANDROID APP.

## INTRODUCTION:

The Tap Card RFID Attendance Project focuses on developing an efficient, automated system for tracking attendance using RFID (Radio Frequency Identification) technology. This project aims to replace traditional manual methods with a more streamlined, accurate, and contactless approach, where individuals can simply tap an RFIDenabled card on a reader to mark their attendance.RFID technology offers numerous advantages, including speed, ease of use, and the ability to handle large volumes of data without the need for manual input. In the context of attendance tracking, this technology significantly reduces errors, enhances security, and improves the overall user experience for both employees and administrators.

## OBJECTIVES:

We present the details of our approach in implementing an RFIDbased attendance system using tap card technology, integrated with an Android application. The system will provide an automated, contactless method for tracking attendance, allowing users to tap RFIDenabled cards to record their presence seamlessly. Realtime data will be captured and synced with a centralized database via the Android app, offering mobile accessibility for administrators to monitor and manage attendance on the go. This project focuses on ensuring the system's scalability, reliability, and efficiency while incorporating security measures to protect user data. Key tools and technologies will include RFID readers, secure data storage systems, and a userfriendly Android application for both administrators and users.

## EXISTING SYSTEM:

- Attendance management is a cornerstone of organizational effectiveness and student accountability.
- Traditional methods often rely on manual processes, leading to challenges such as inaccuracies, time inefficiencies, and limited realtime insights.
- This introduction delves into the description and significance of an existing Embedded SystemBased Attendance Management System, highlighting its role in addressing these challenges and enhancing the overall efficiency of attendance tracking.

## PROPOSED SYSTEM:

- The proposed system aims to modernize and automate the traditional attendance management process in educational institutions.
- By leveraging microcontroller technology, RFID cards, EMReader sensors, and connectivity modules, this system enhances accuracy, efficiency, and convenience in recording and managing attendance.

## METHODOLOGY:

### What is RFID?

RFID stands for RadioFrequency Identification. It is a technology that uses radio waves to wirelessly identify and track objects, people, or animals. RFID systems consist of two main components: RFID tags (or cards) and RFID readers.

- RFID readers are devices that use radiofrequency signals to communicate with RFID tags.
- When an RFID tag is brought into the proximity of an RFID reader, the reader sends out electromagnetic waves that power the tag and read its unique identifier.

### Hardware & Software Components:

#### Hardware Components:

- EMReader module
- RFID Cards/Tags
- Node MCU ESP8266
- Power Supply
- Buzzer

#### Software Components:

- **Frontend:** Java
- **Backend:** Firebase
- Arduino IDE
- Embedded C program
- Mobile application
- RFID Library/SDK
- User Database Management
- Login/Logout Logic

## WORKFLOW:

**1. System Setup:**

**RFID Infrastructure:** RFID readers are installed at relevant entry and exit points.

**RFID Tape Cards:** Each individual is assigned an RFID tape card linked to their unique ID in the system's database.

**Mobile App**: An Android app is developed and made available for download to all users (students, employees, etc.). The app is integrated with the central system for realtime data access.

**2. Card Scanning and Attendance Logging:**

**RFID Reader Interaction:** When an individual approaches the RFID reader with their tape card, the reader captures the unique ID.

**Database Syncing:** The scanned ID is immediately sent to the central database, which updates the attendance record in real time.

**3. Mobile App Features:**

**Attendance Records:** Users can log in to the Android app and view their attendance history, including date, time, and status (present, late, absent).

**Leave Requests:** The app allows users to request leave directly, which is routed to the system for approval by the administrator.

**Lost Card Reporting:** In case of a lost tape card, users can report it through the app, and the system will disable the old card and issue a new one.

**4. Administrator Control Panel:**

**Monitoring and Tracking:** Administrators can use the Android app or a web dashboard to track realtime attendance data, monitor absenteeism, and generate reports.

**Manual Adjustments:** In cases where attendance errors occur (e.g., a forgotten card), admins can manually adjust the records via the app.

**Report Generation:** Admins can access and download attendance reports, which can be filtered by dates, departments, or individual users, directly from the app.

# BLOCK DIAGRAM: