



BiomA

1. Introduction

BiomA is an innovative solution for streamlining attendance management in educational institutions and industries. By utilizing QR code scanning, geofencing, and fingerprint authentication, BiomA ensures accurate and efficient tracking of attendance. This system enhances management processes, reduces administrative burden, and improves overall operational efficiency.

2. Features

- **QR Code Scanning:** Easy attendance marking via QR codes.
- **Geofencing:** Ensures users are within a designated area.
- **Fingerprint Authentication:** Verifies the identity of users & whether the user is with the device in geofenced area.
- **User-Friendly Interface:** Simple and intuitive design for easy use.
- **Real-Time Attendance Tracking:** Immediate updates to the attendance system.

3. System Architecture

- **Client-Side:** Mobile application available for Android.

- **Server-Side:** Backend server for handling attendance data, authentication, and geofencing.
- **Database:** Secure storage of user data and attendance records.

4. User Guide

Installation

1. Download the BiomA app from the Google Play Store.
2. Install the app on your Android device.

Logging In

1. Open the BiomA app.
2. Login with your institutional or company credentials.

Using the App

1. Scan the QR code provided by the lecturer or supervisor.
2. Ensure your device is within the geofenced area.
3. Complete the fingerprint authentication to mark your attendance.

5. Technical Specifications

- **Platform:** Android
- **Programming Languages:** Java/Kotlin (Android), Python/Node.js (Server)
- **Database:** SQLite
- **Geofencing API:** Google Location Services
- **Fingerprint Authentication API:** Android Biometric API

6. Implementation Details

QR Code Scanning

- Utilizes the device camera to scan QR codes.
- Converts the QR code to a text key for verification.

Geofencing

- Uses GPS to create a virtual boundary around the institution or industry.
- Ensures the device is within this boundary to mark attendance.

Fingerprint Authentication

- Uses the device's biometric scanner.
- Verifies the fingerprint against the registered user.

7. Security and Privacy

- **Data Encryption:** All data is encrypted during transmission and storage.
- **User Privacy:** Fingerprint data is stored securely and not shared.
- **Compliance:** Adheres to data protection regulations.

8. Troubleshooting

- **QR Code Not Scanning:** Ensure good lighting and proper alignment.
- **Geofencing Issues:** Check GPS settings and ensure the device is within the designated area.
- **Fingerprint Not Recognized:** Re-register fingerprint or clean the scanner.

9. FAQs

- **What if I forget my login credentials?**
 - Contact your institution's IT department for assistance.
- **Can I use BiomA on multiple devices?**
 - No, each user is allowed to register and use one device at a time.
- **How is my data protected?**
 - All data is encrypted and stored securely.

10. Future Enhancements

- **Multi-Platform Support:** Expanding to iOS.
- **Advanced Analytics:** Detailed attendance reports and analytics.
- **Integration with Other Systems:** Compatibility with various ERP and HR systems.