SOFTWARE REQUIREMENTS SPECIFICATION (SRS)
Smart Automated Student Attendance Management System

Purpose

The purpose of this Software Requirements Specification (SRS) is to describe all requirements of the smart automated attendance system using QR codes, geolocation, and cloud storage.

Scope

The system allows students to scan QR codes, verify presence using geofencing, and be monitored in real time. Admins generate QR codes, view attendance, and manage authentication.

Definitions

QR Code – Unique code per course.
Geofencing – Virtual boundary using GPS.
Firebase Auth – Secure login service.

Users

Students, Teachers, Administrators, ICT Department.

System Overview

- The system has three layers: Student interface, Validation engine, and Cloud database.

System Perspective

- Replaces manual attendance with automated mobile tracking.

User Classes

- Student, Administrator, Teacher.

FUNCTIONAL REQUIREMENTS

- FR1: Email/Google login.
- FR2: Only registered users access app.
- FR3: Unique QR generation per course.
- FR4: Students scan QR to mark attendance.
- FR5: Geofence validation.
- FR6: Deny attendance outside geofence.

- FR7: Send data to Google Sheets/MySQL.
- FR8: Record student info + timestamp.
- FR9: Continuous presence monitoring.
- FR10: Auto-remove after 15 minutes absence.
- FR11: Admin sees real-time attendance.
- FR12: Admin manages course times & QR codes.

NON-FUNCTIONAL REQUIREMENTS

- Security: Firebase auth + encrypted data.
- Usability: Simple mobile interface.
- Compatibility: Android required; iOS optional.

SYSTEM ARCHITECTURE

- Components: Mobile App (Flutter/Android), Backend (Python), Database (Google Sheets/MySQL), Firebase Auth, Geofencing API.

CONSTRAINTS & ASSUMPTIONS

- Constraints: Internet, GPS, unique QR per class.
- Assumptions: Students have smartphones, teachers provide QR codes.
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CONCLUSION

- This SRS defines all system requirements for building a smart QR-based attendance platform with geolocation verification and real-time logging.