QR Code Attendance System Documentation

University Name

April 24, 2025

Contents

Chapter 1

Introduction

1.1 Project Overview

This documentation describes a comprehensive QR code-based attendance tracking system implemented using Flutter and Supabase. The system consists of two main components: a teacher interface for managing attendance and generating QR codes, and a student interface for scanning QR codes to mark attendance.

1.2 Objectives

- Streamline the attendance tracking process
- Reduce manual entry errors
- Provide real-time attendance statistics
- Enable efficient attendance management

Chapter 2

Technical Specifications

2.1 Hardware Requirements

- Mobile device with camera capability (for QR scanning)
- Internet connectivity
- Minimum device specifications:
  - Android 6.0 or higher
  - iOS 11.0 or higher
  - 2GB RAM minimum
  - Camera with autofocus

2.2 Software Stack

- Frontend: Flutter Framework
- Backend: Supabase
- Database: PostgreSQL
- Authentication: Supabase Auth

2.3 Development Tools

- IDE: Visual Studio Code
- Version Control: Git
- State Management: Riverpod
- CI/CD: GitHub Actions

Chapter 3

Application Architecture

3.1 System Architecture

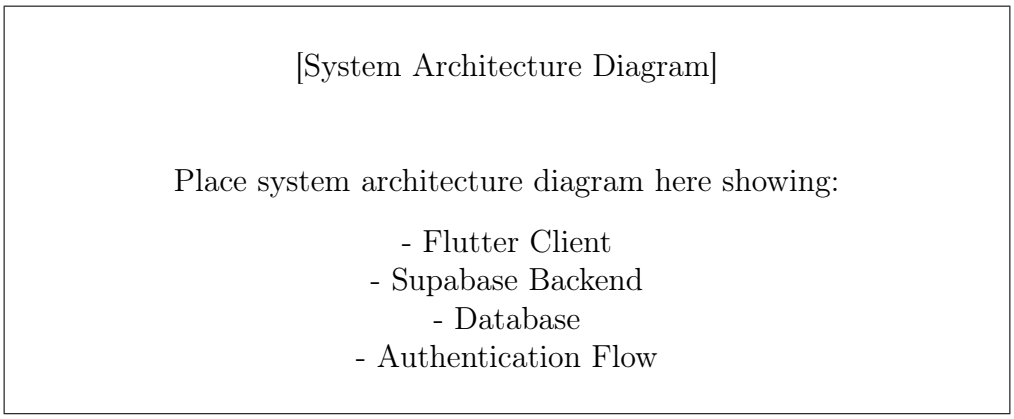

Figure 3.1: System Architecture Diagram

3.2 Database Schema

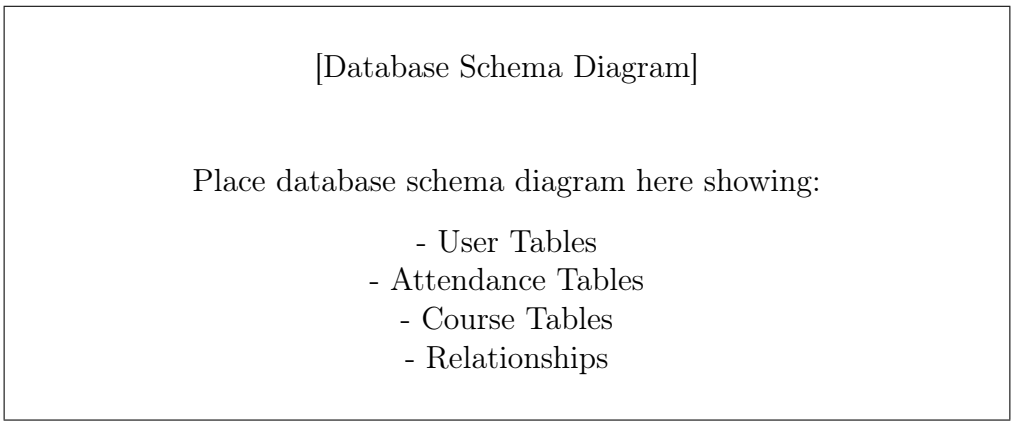

Figure 3.2: Database Schema

Chapter 4

Interface Documentation

4.1 Teacher Interface

4.1.1 Login Screen

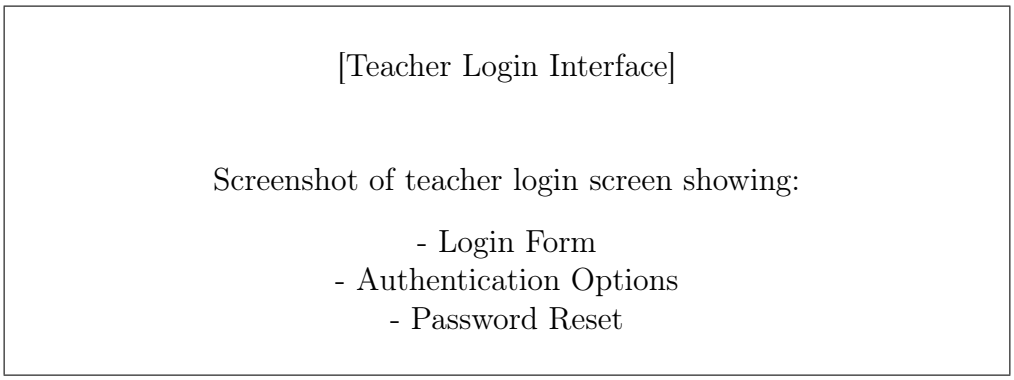

Figure 4.1: Teacher Login Interface

4.1.2 Dashboard

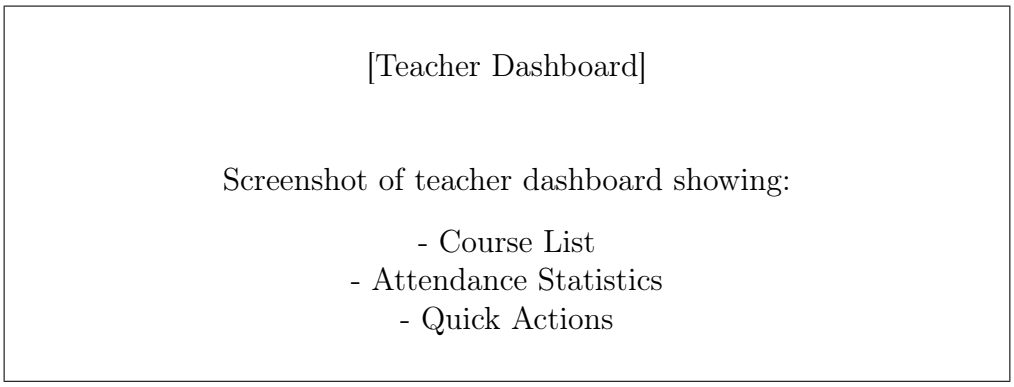

Figure 4.2: Teacher Dashboard

4.1.3 QR Code Generation

[QR Code Generation Interface]

Screenshot of QR generation screen showing:

- Course Selection
- QR Code Display
- Time Settings

Figure 4.3: QR Code Generation Interface

4.1.4 Attendance Management

[Attendance Management Interface]

Screenshot of attendance management showing:

- Student List
- Attendance Records
- Export Options

Figure 4.4: Attendance Management Interface

4.2 Student Interface

4.2.1 Login Screen

[Student Login Interface]

Screenshot of student login screen showing:

- Login Form
- Student ID Entry
- Password Reset

Figure 4.5: Student Login Interface

4.2.2 QR Scanner

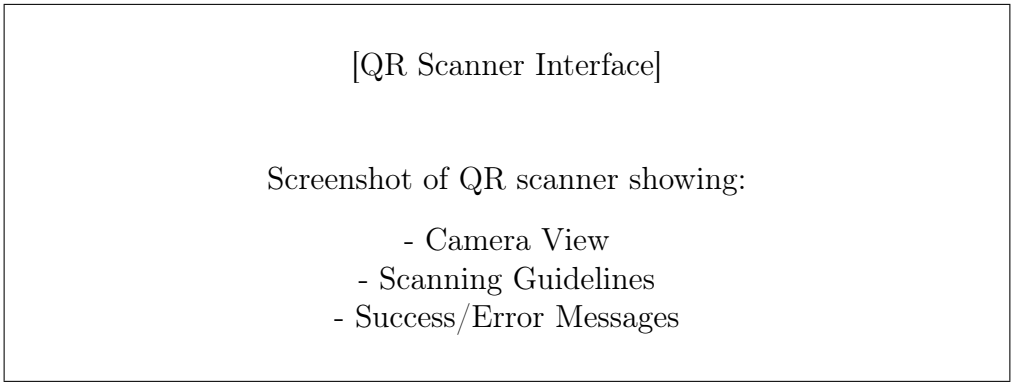

Figure 4.6: QR Code Scanner Interface

4.2.3 Attendance History

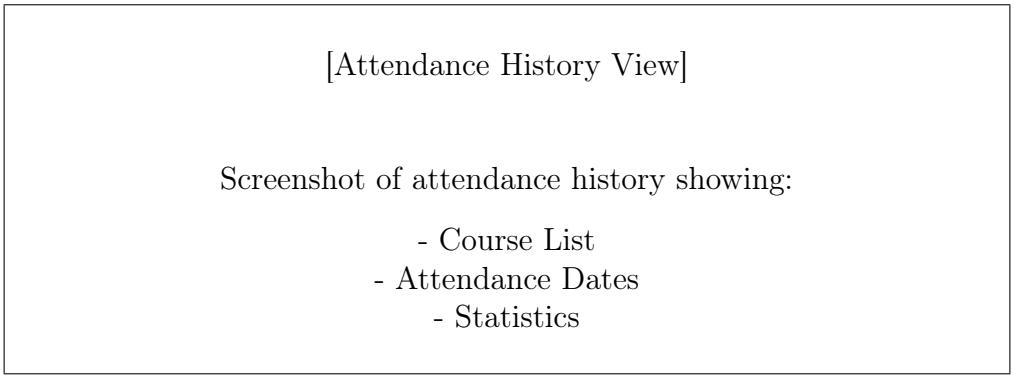

Figure 4.7: Attendance History View

Chapter 5

Implementation Details

5.1 Core Features

- User authentication and authorization
- QR code generation and scanning
- Real-time attendance tracking
- Attendance report generation
- Profile management

5.2 Implementation Challenges

- Handling offline scenarios
- QR code security measures
- Real-time synchronization
- Data consistency across devices

5.3 Future Improvements

- Batch attendance processing
- Advanced analytics dashboard
- Integration with academic management systems
- Enhanced reporting features with export options