Fee Management System

Chapter 1: Introduction

1.1 Overview

The Fee Management System is a web-based application designed to automate and manage the process of fee collection, payment tracking, and financial reporting for educational institutions. Traditional fee handling methods are often manual, time-consuming, and prone to errors, which can lead to delays, mismanagement, and lack of transparency. This system provides a centralized digital solution that ensures accuracy, security, and efficiency in managing school fees.

The system supports two primary user roles: Admin and Parent. Administrators are responsible for defining fee structures, assigning fees, monitoring payments, and generating reports, while parents can securely view assigned fees, make online payments, and track their payment history. By integrating online payments, automated notifications, and real-time dashboards, the Fee Management System enhances operational efficiency and improves communication between educational institutions and parents.

1.2 Brief Description

The Fee Management System enables schools to digitally manage fee-related operations through a secure and user-friendly interface. Admins can create and manage different types of fees, assign them to parents, and monitor payment statuses. Parents can log in to view their dues, complete payments online, and receive reminders for upcoming or overdue fees.

1.3 Project Background

Educational institutions require efficient financial management systems to ensure timely fee collection and transparency. Existing solutions are often expensive or overly complex for small and medium-sized institutions. The Fee Management System is developed as a lightweight, cost-effective, and secure alternative that can be easily deployed and extended according to institutional needs.

Chapter 2: Problem Definition

2.1 Problem Statement

Most educational institutions rely on manual or semi-automated fee management processes that are inefficient and error-prone. These systems lack real-time tracking, automated reminders, and secure online payment options. Parents often face inconvenience in tracking dues and payment history, while administrators struggle with monitoring unpaid or overdue fees. There is a need for

a centralized, secure, and automated system that simplifies fee management and improves transparency.

2.2 Proposed Solution

The proposed Fee Management System addresses these challenges by providing a web-based platform that automates fee structure management, payment processing, and reporting. The system ensures secure authentication, role-based access control, real-time payment tracking, and automated notifications, resulting in improved efficiency and user experience.

2.3 Scope of the Project

The scope of the Fee Management System includes:

- Secure registration and login for Admins and Parents
- Fee structure creation, assignment, and management
- Online fee payment and transaction tracking
- Automated notifications and reminders
- Payment history and reporting

The system does not cover offline payment handling or integration with external accounting software in its current version.

Chapter 3: Methodology

3.1 Development Methodology

The development of the Fee Management System follows an Agile-based iterative approach. The system is developed in small functional modules, allowing continuous testing, feedback, and improvement. This methodology ensures early detection of issues and flexibility in accommodating changes.

3.2 Software Development Life Cycle (SDLC)

The project follows these SDLC phases:

1. Requirement Analysis
2. System Design
3. Implementation
4. Testing
5. Deployment and Maintenance

Each phase is iteratively refined to improve system quality and performance.

3.3 Tools and Technologies

- Frontend: HTML5, CSS3, JavaScript, Bootstrap 5
- Backend: Node.js, Express.js
- Database: SQLite3
- Authentication: JWT, bcrypt
- Deployment: Docker, Docker Compose

Chapter 4: Requirement Analysis

4.1 Functional Requirements

FR-01 User Registration
The system shall allow users to register as Admin or Parent.

FR-02 User Login
The system shall provide secure login using email and password.

FR-03 Role-Based Access Control
The system shall restrict access to features based on user roles.

FR-04 Fee Structure Management
Admins shall be able to create, update, assign, and delete fee structures.

FR-05 Online Fee Payment
Parents shall be able to pay assigned fees using online payment methods.

FR-06 Payment Tracking
The system shall record and display payment status and transaction details.

FR-07 Payment History
Users shall be able to view payment history and previous transactions.

FR-08 Notifications
Admins shall be able to send payment reminders and notifications.

FR-09 Reporting
Admins shall be able to generate payment and fee reports.

4.2 Non-Functional Requirements

NFR-01 Performance
The system shall respond to user requests within an acceptable time under normal load.

NFR-02 Security
The system shall securely store passwords using hashing and protect APIs using JWT authentication.

NFR-03 Reliability
The system shall ensure accurate transaction processing without data loss.

NFR-04 Scalability
The system shall support future expansion such as additional user roles or payment methods.

NFR-05 Usability
The system shall provide an intuitive and user-friendly interface.

NFR-06 Maintainability
The system shall follow modular coding practices to simplify maintenance and updates.

Chapter 6: Diagrams

6.1 UseCase Diagram

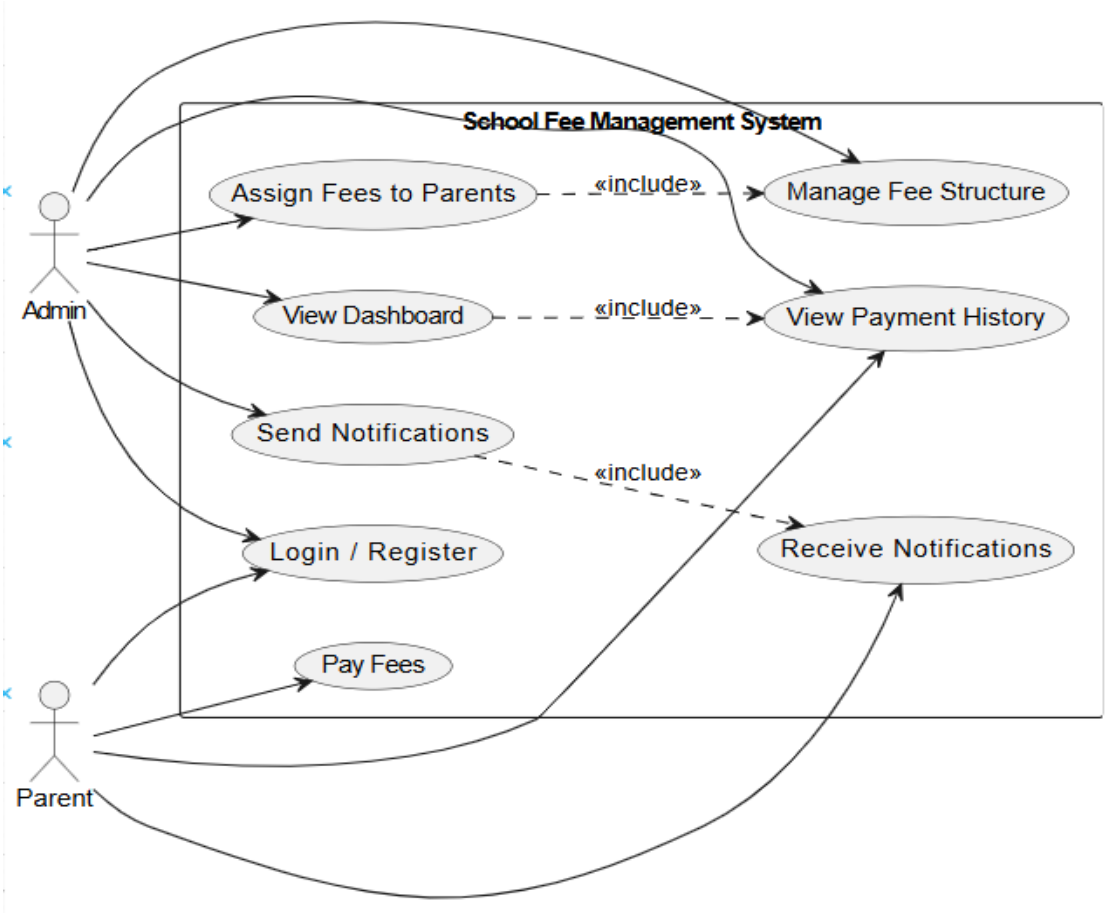

Fig 6.1 Use case diagram of Fee management system.

6.2 Sequence Diagram

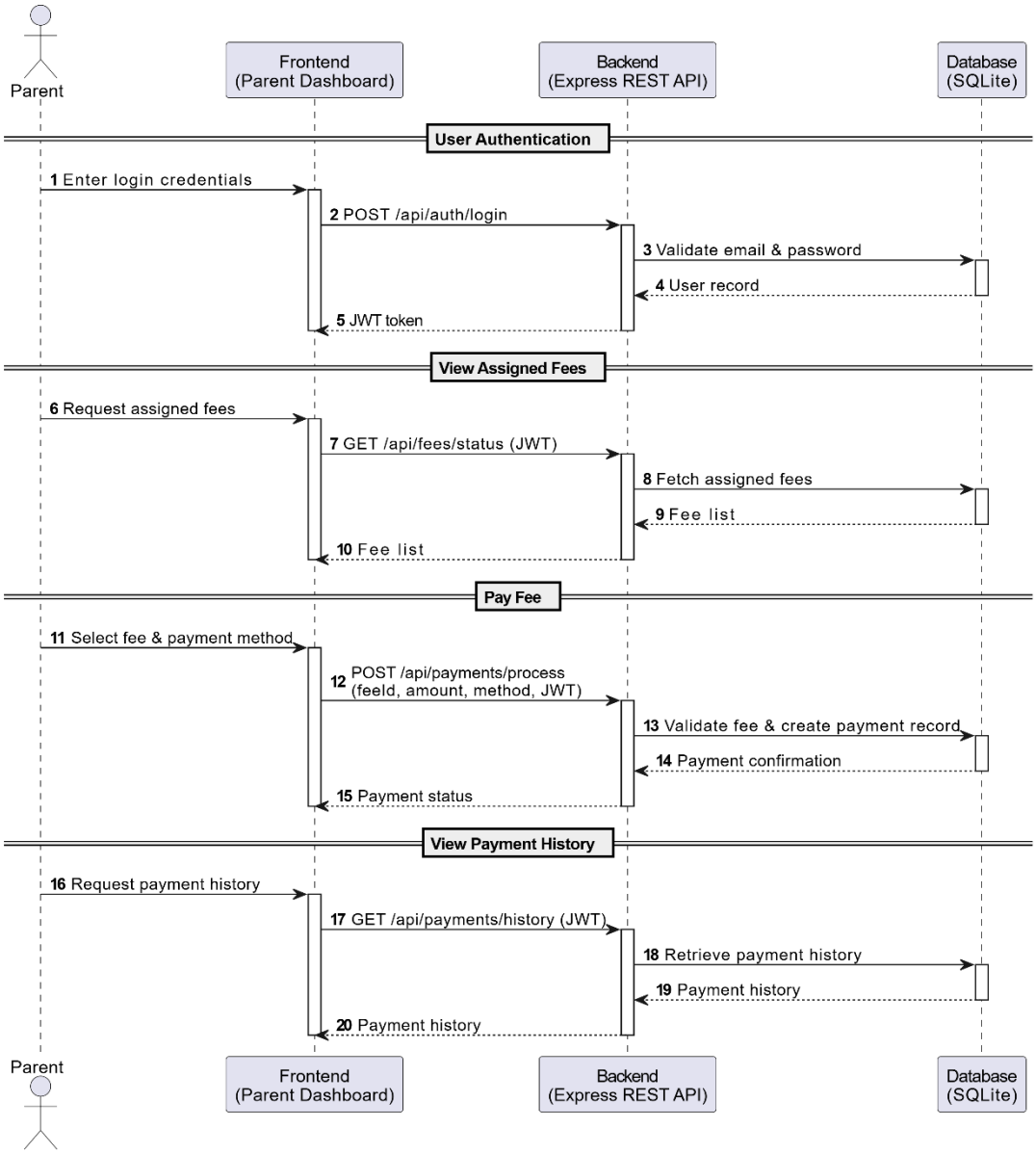

Fig 6.2 Sequence diagram of Fee management system.

Chapter 5: Conclusion

The Fee Management System provides a secure, efficient, and user-friendly solution for managing school fees. By automating fee handling, enabling online payments, and offering real-time insights, the system reduces administrative burden and improves transparency. Its modular design allows future enhancements such as multi-institution support, advanced analytics, and additional payment gateways.