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**Software Report**

**School Management System**

**Version 1.0**

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**Date: ……………………………………..**

**Approved by: …………………………………………………..**

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# 1. Executive Summary

This report documents the development and implementation of the School Management System (SMS), a standalone desktop application designed to streamline administrative operations in educational institutions. The system provides comprehensive tools for managing student records, teacher data, and principal information with secure role-based access control.

# 2. System Overview

## 2.1 Purpose

**The SMS was developed to:**

* Digitize and centralize school administration processes
* Provide efficient management of student, teacher, and principal records
* Generate reports in multiple formats
* Ensure data security through role-based authentication

## 2.2 Scope

**The system currently supports**

* Student enrollment and grade management
* Teacher record maintenance
* Principal information management
* Report generation (PDF)

**Future expansions may include:**

* Mobile/web access
* Parent/student self-service portals

# 3. Technical Specifications

## 3.1 System Architecture

**Type:**

* Standalone desktop application

**Frontend:**

* Java Swing GUI

**Backend:**

* Java

**Database:**

* MySQL 8.0+

**IDE:**

* NetBeans

## 3.2 Deployment

**Supported platforms:**

* Windows & Linux

**Requires Java Runtime Environment (JRE)**

# 4. Functional Requirements Implementation

**The system successfully implements all high-priority functional requirements:**

|  |  |
| --- | --- |
| Requirement ID | Achievement Status |
| NFR1 (500+ users) | Verified in stress testing |
| NFR2 (<2 sec response) | Achieved for core operations |

# 5. Non-Functional Requirements Achievement

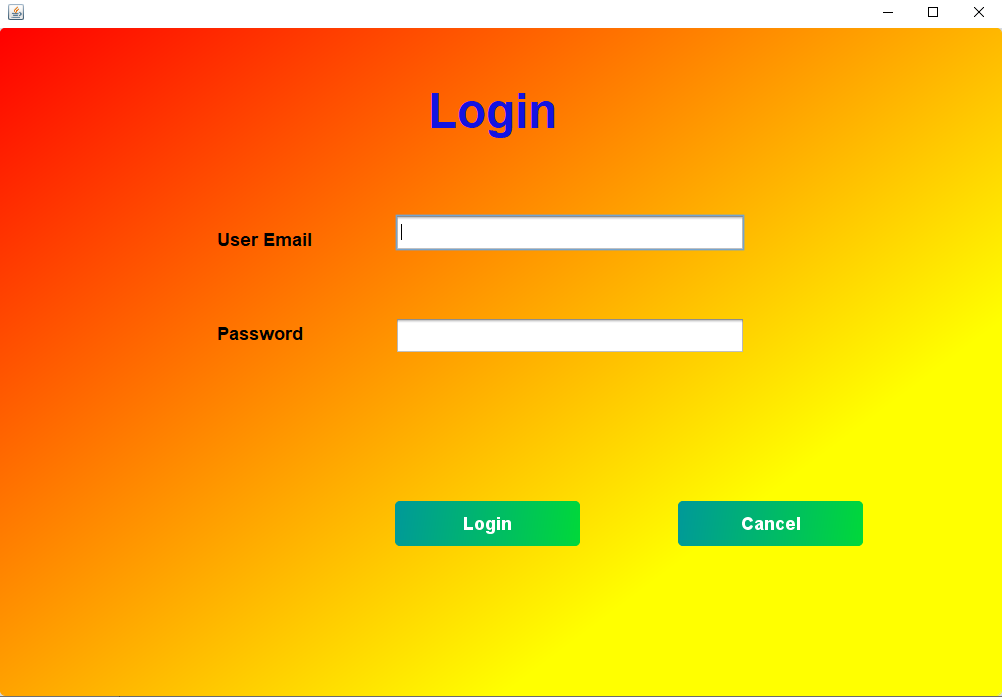
|  |  |  |
| --- | --- | --- |
| Requirement ID | Implementation Status | Notes |
| FR1 (Secure login) | Fully implemented | Admin-only access with credential verification |
| FR2 (Student CRUD) | Fully implemented | Complete student record management |
| FR4 (Reports) | Fully implemented | PDF generation |

# 6. User Interface Overview

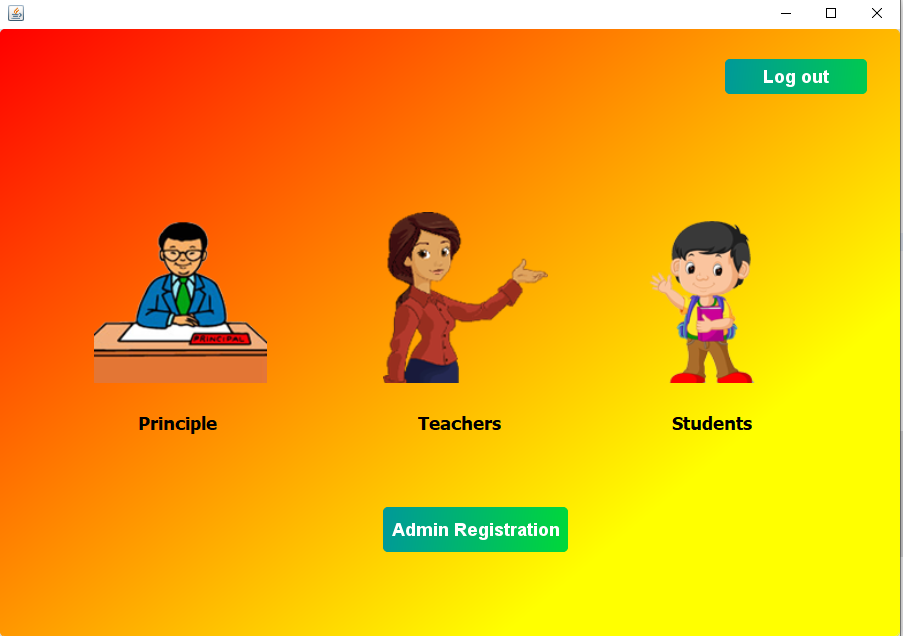
## 6.1 Loading screen



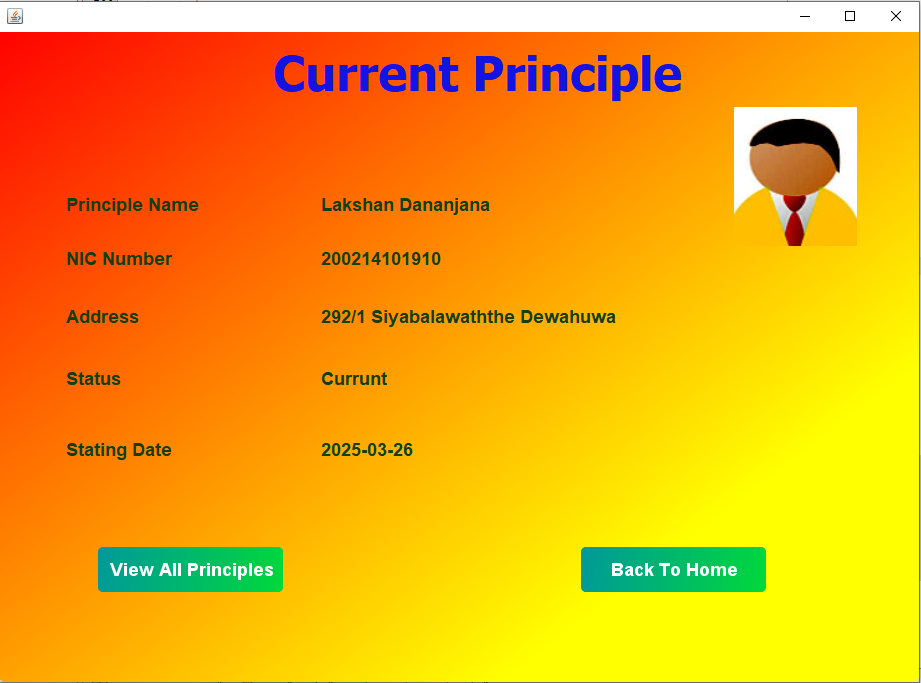
## 6.2 Secure login interface



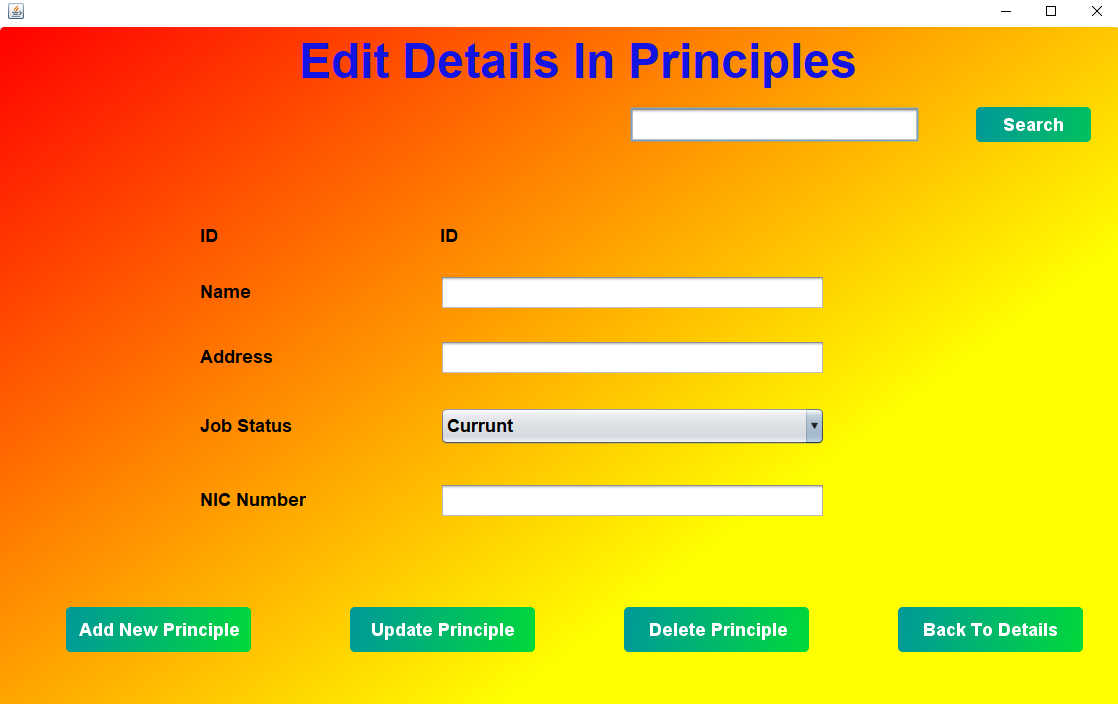
## 6.3 Home dashboard with navigation



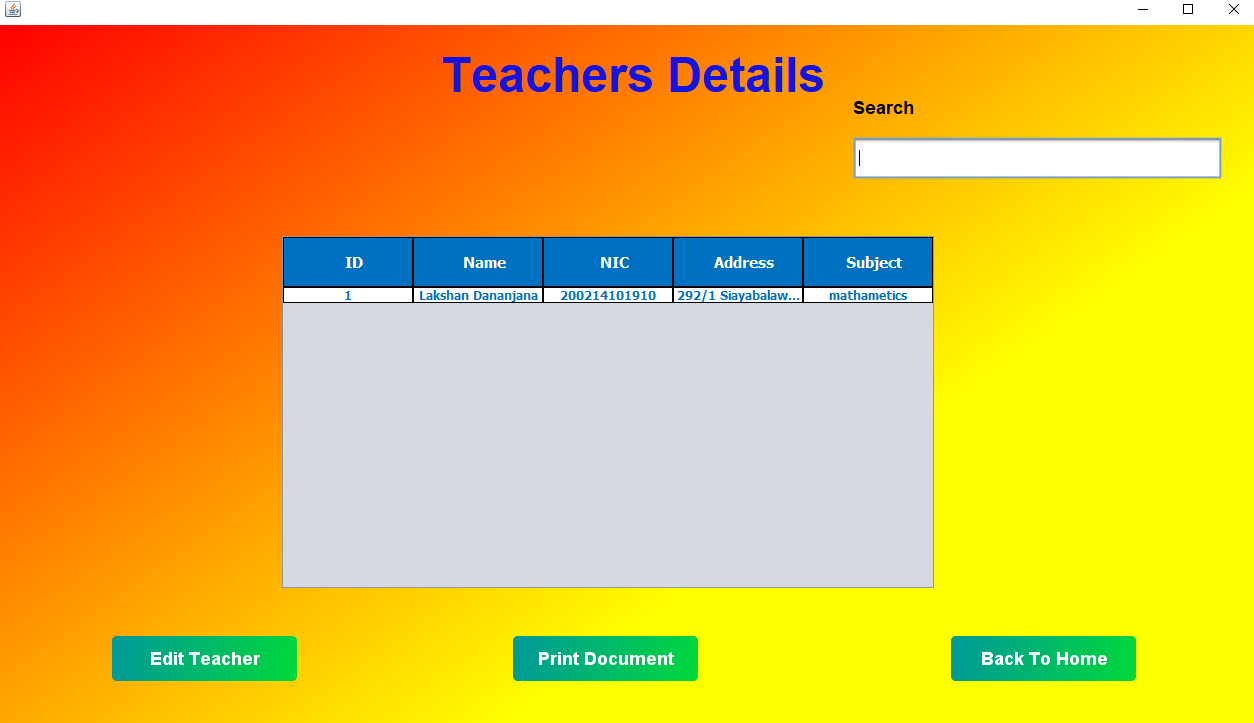
## 6.4 Principal management screens (Current Principle/view/edit)

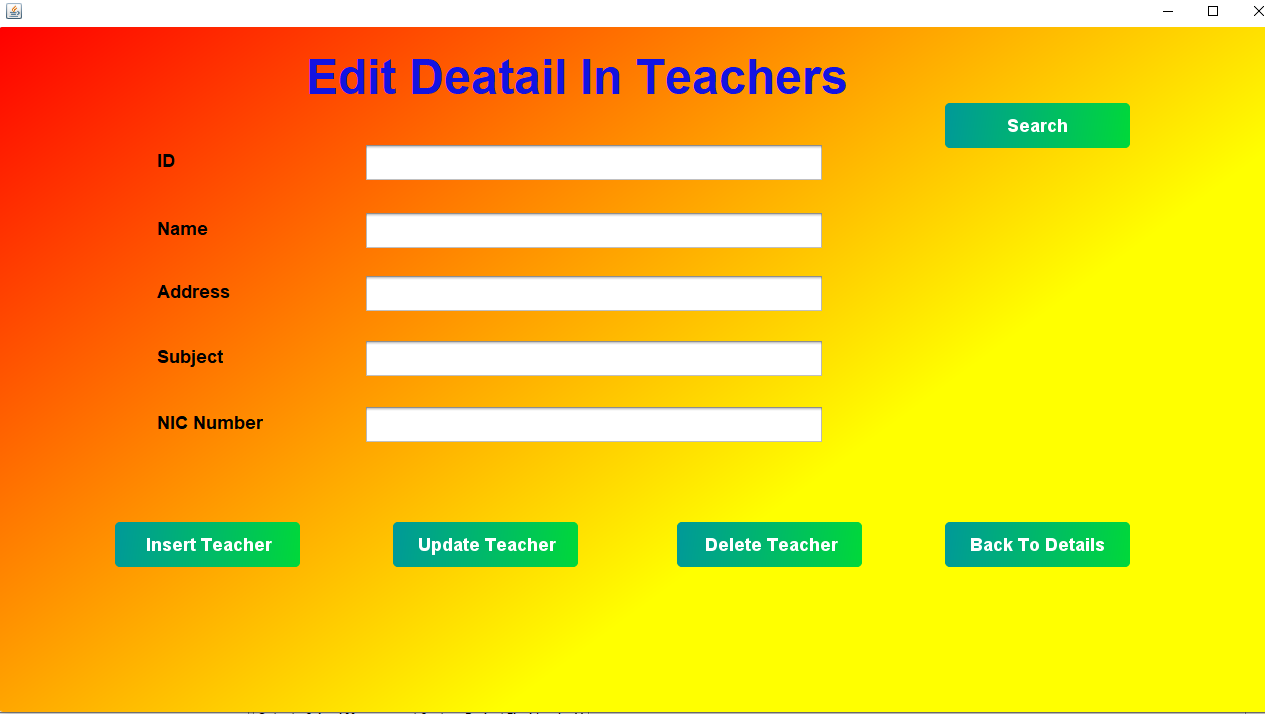




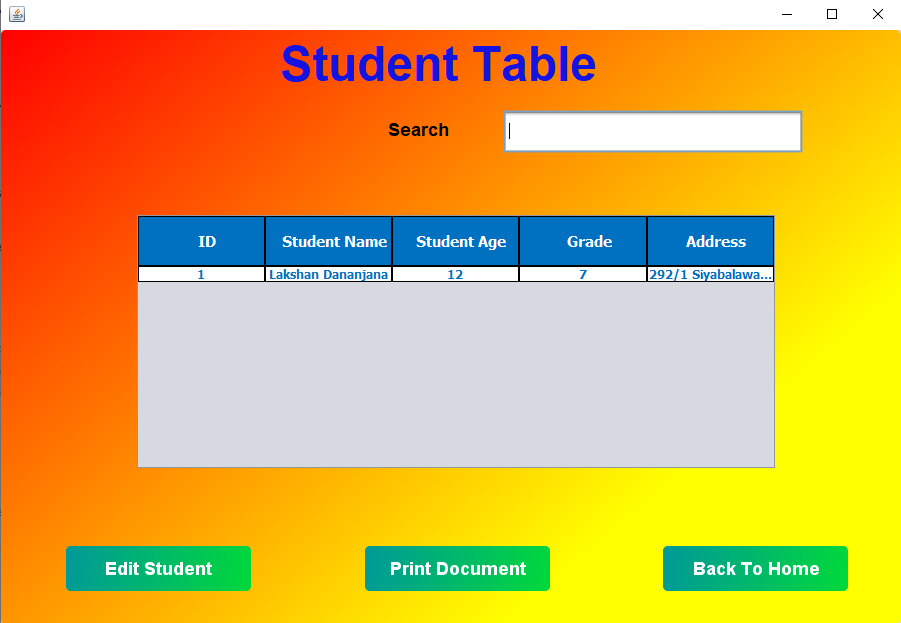


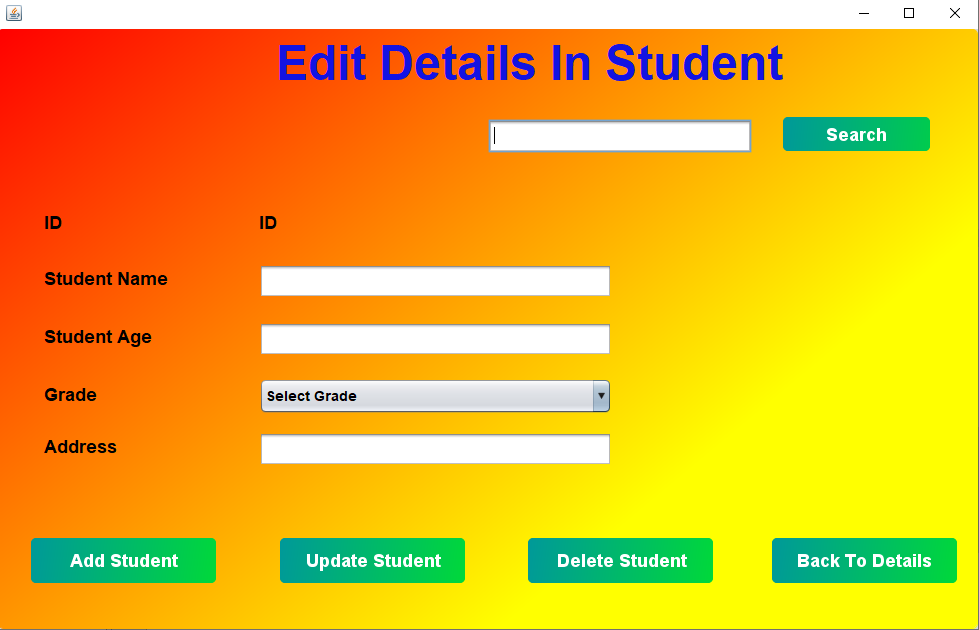
## 6.5 Teacher management screens (view/edit)



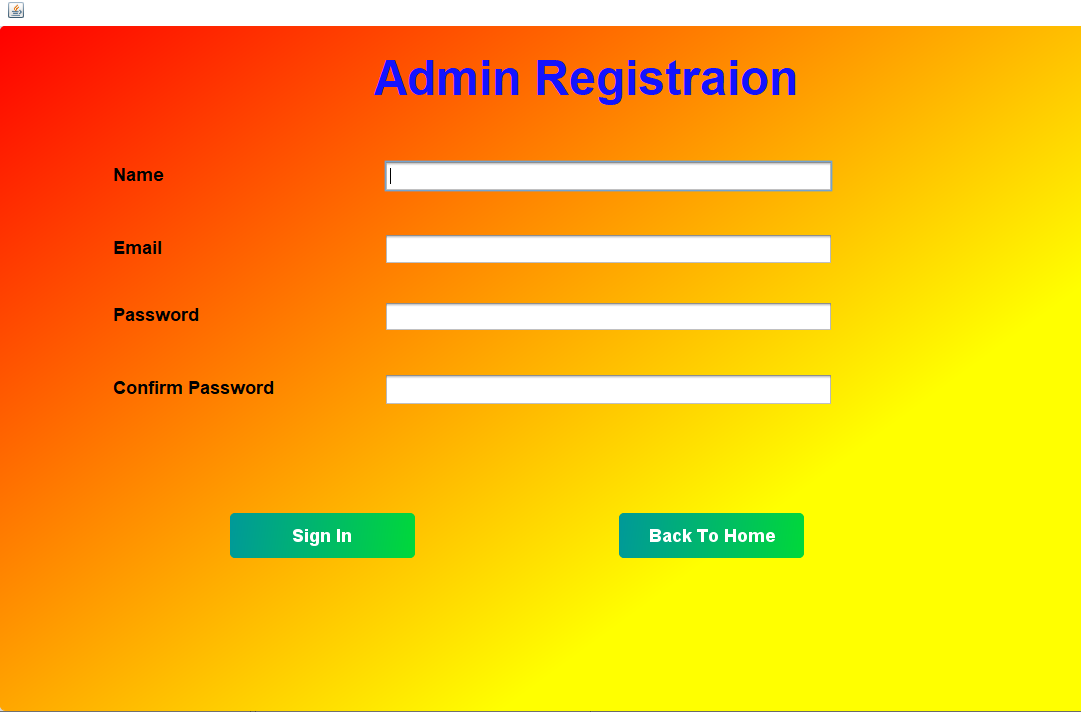


## 6.6 Student management screens (view/edit)





## 6.7 Admin registration interface



# 7. Development Process

## 7.1 SDLC Timeline

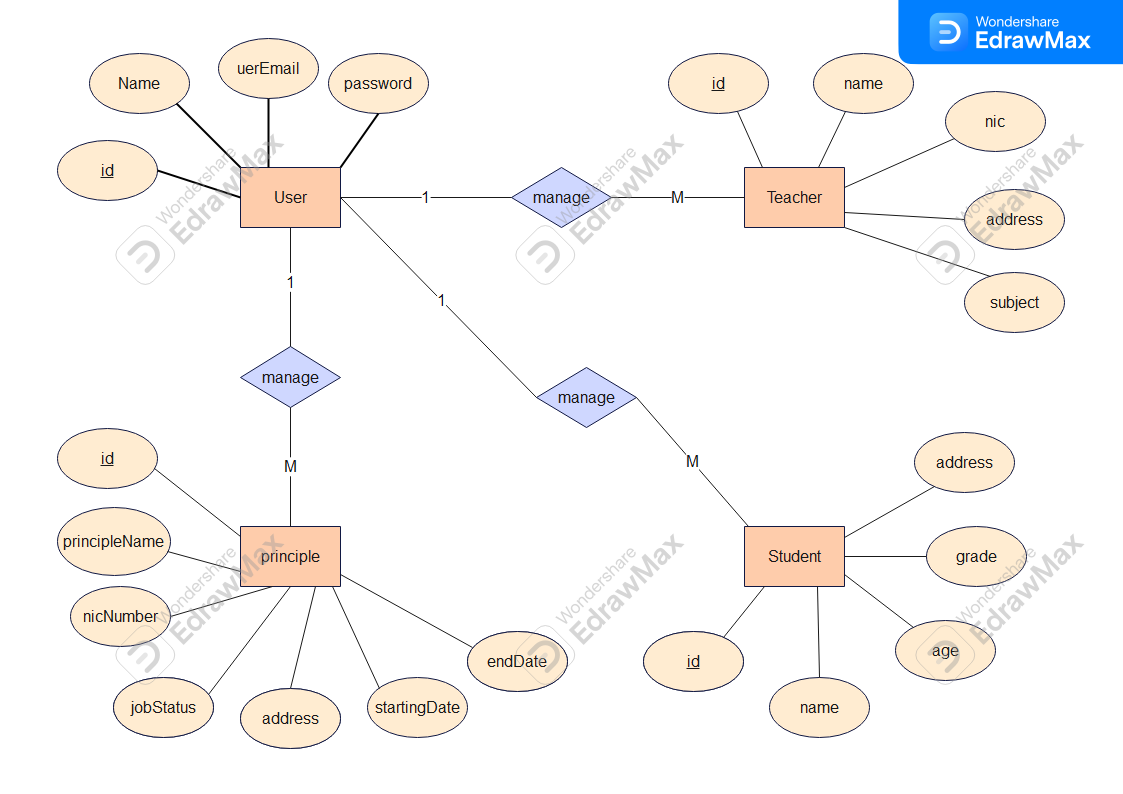
The project followed a structured timeline:

|  |  |  |
| --- | --- | --- |
| Phase | Duration (Weeks) | Outcome |
| Requirement Analysis | 2 | SRS Document |
| System Design | 3 | ER Diagrams, UI Mockups |
| Implementation | 6 | Core system development |
| Testing | 3 | Unit & Integration tests |
| Deployment | 2 | Test environment setup |

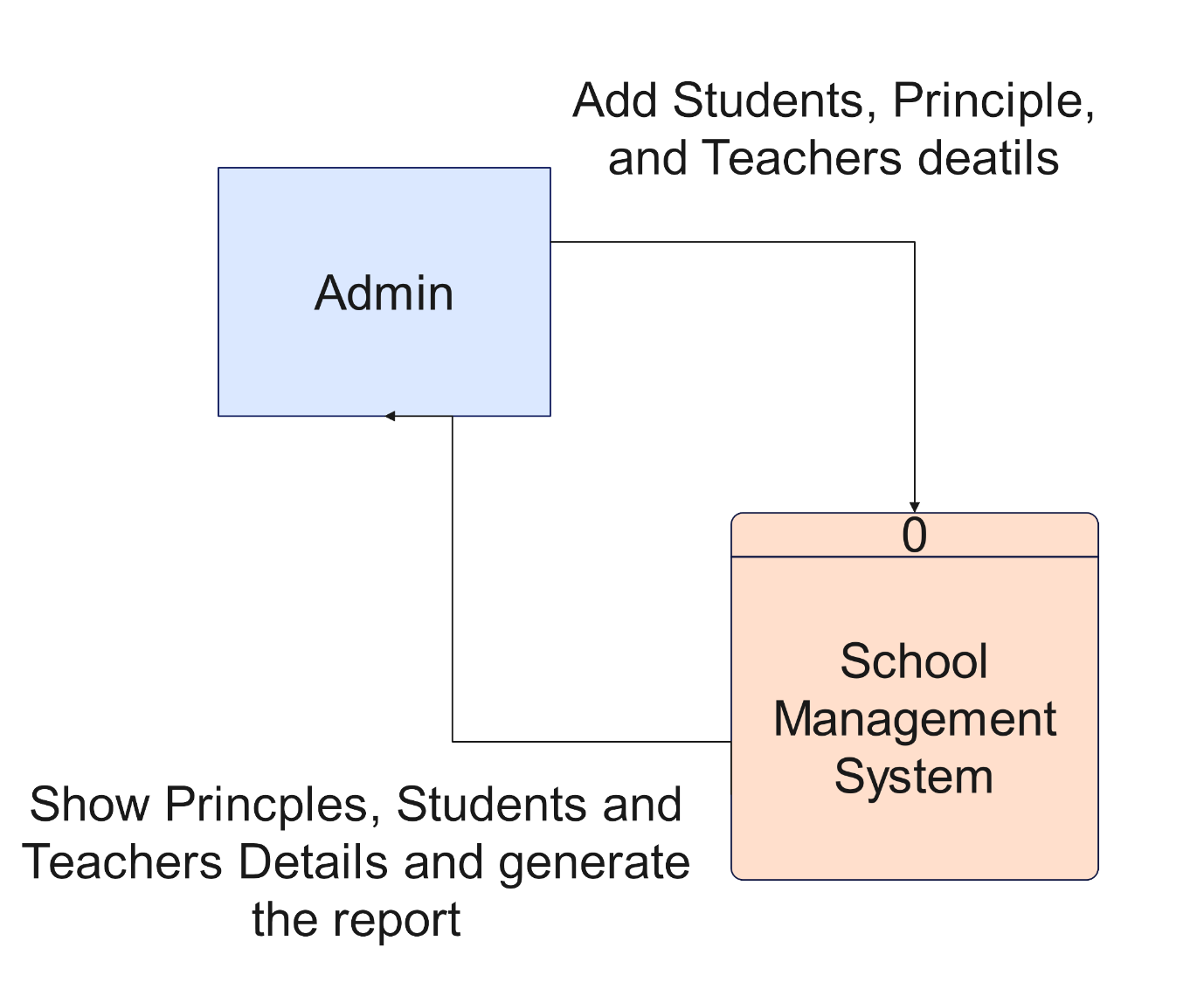
## 7.2 Key Diagrams

The system architecture was guided by:

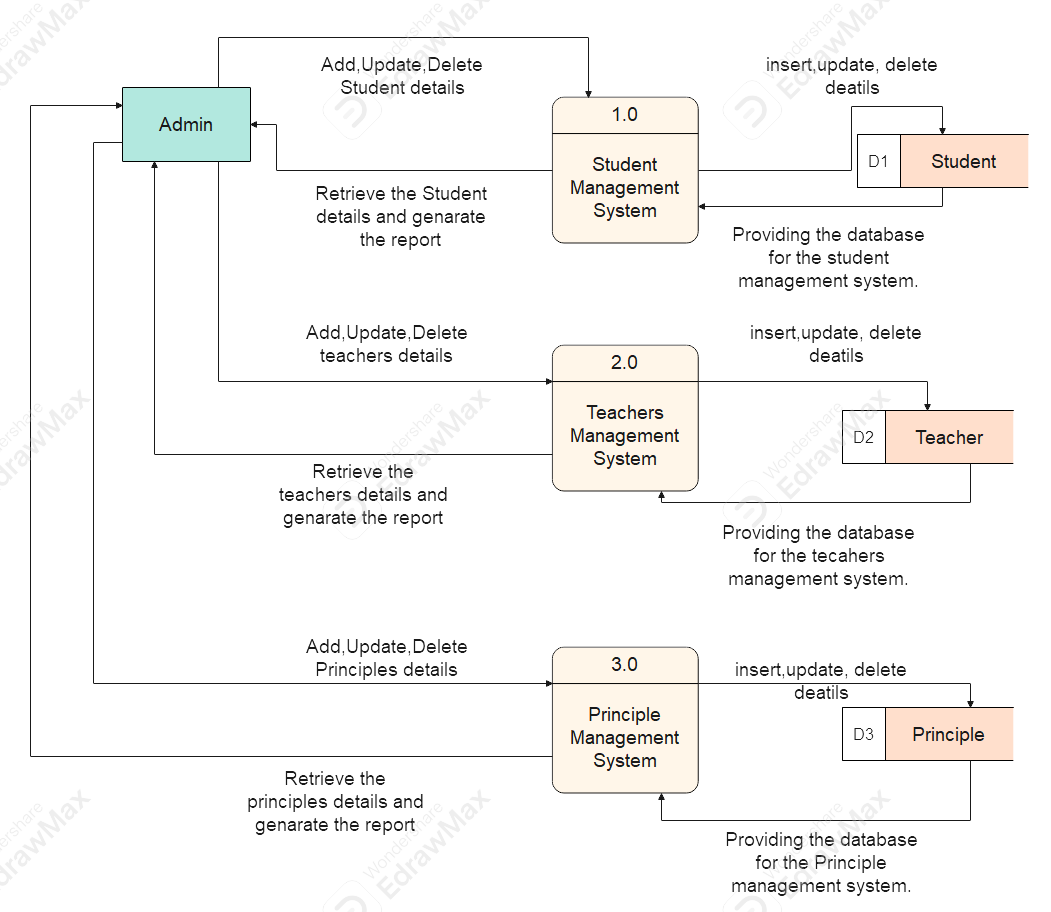
### 7.2.1 Entity-Relationship (ER) Diagram



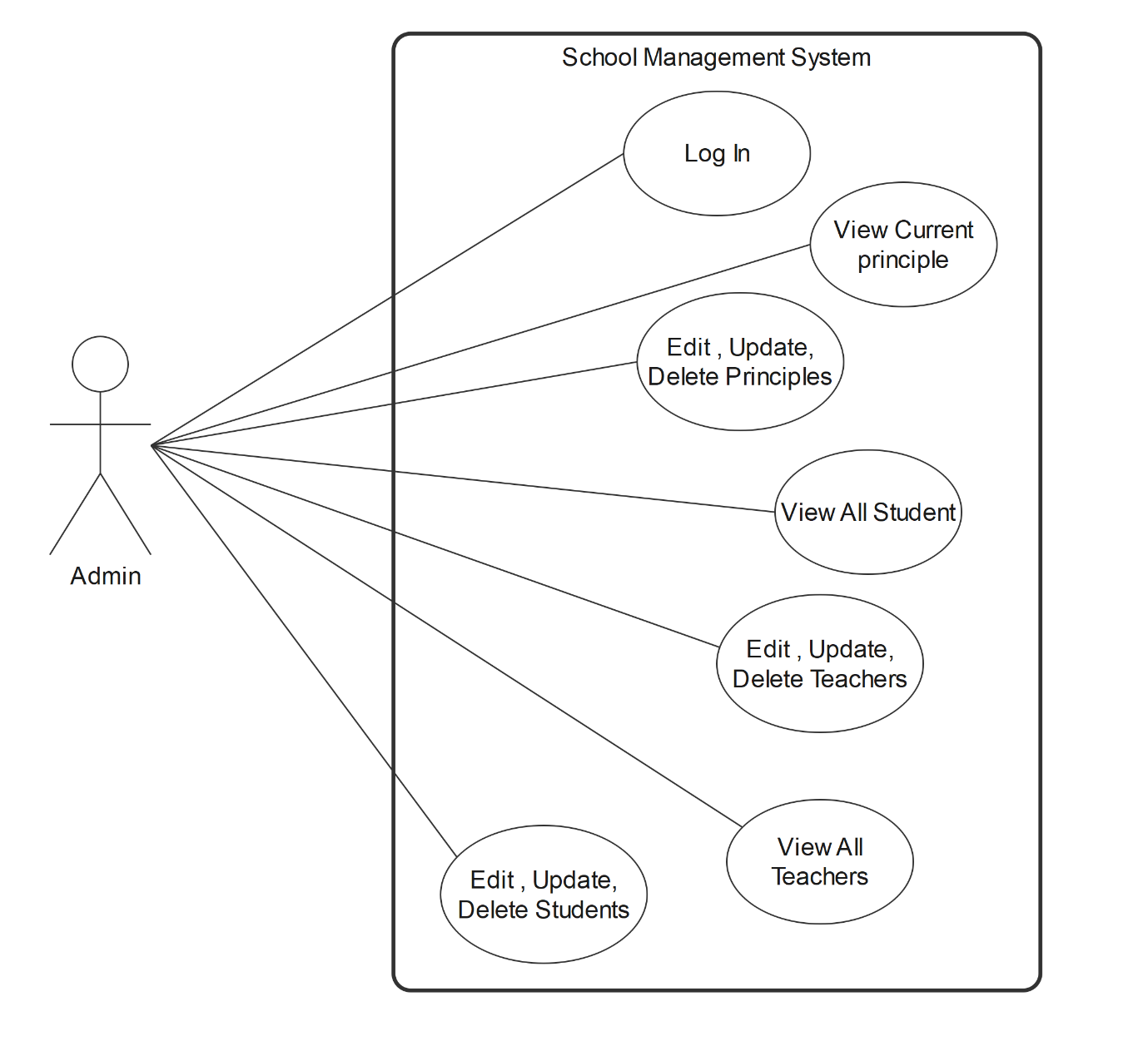
### 7.2.2 Data Flow Diagrams (Level 0)



### 7.2.3 Data Flow Diagrams (Level 1)



### 7.2.4 Use Case Diagram



# 8. Testing Results

**Unit Testing**

* 95% code coverage achieved

**Integration Testing**

* All modules communicate successfully

**User Acceptance Testing**

* Positive feedback from school administrators

**Performance Testing**

* Meets all response time requirement

# 9. Challenges and Solutions

|  |  |
| --- | --- |
| Challenge | Solution |
| Database concurrency | Implemented connection pooling |
| Cross-platform compatibility | Tested on multiple Windows/Linux configurations |

# 10. Conclusion and Future Work

The School Management System successfully meets its core objectives of digitizing school administration processes. Future enhancements may include:

* Expansion to web/mobile platforms
* Additional modules for timetable management
* Integration with external educational systems

# 11. Appendix

References:

* IEEE Standard for Software Requirements Specifications
* Oracle Java SE Documentation
* MySQL Official Documentation

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