Software Requirement Specification (Version 3)

ECE 651 Team #6

Introduction

This document details the enhancements and further requirements for the Attendance Management System (AMS) version 3.0. Building on the successful implementation of version 2.0, this iteration focuses on improving the user interface and extending the application's accessibility through GUI-based solutions. Version 3.0 introduces a JavaFX application for administration tasks and GUI options for taking attendance to accommodate both desktop and mobile users, thereby enhancing user experience and accessibility.

System Overview

AMS 3.0 will continue to utilize the client/server architecture established in version 2.0. The system will feature new graphical user interfaces (GUIs) for both the administrative and attendance-taking functionalities, supporting various platforms through desktop and mobile applications. The server will manage all data interactions and ensure secure and reliable operations across multiple platforms.

System Requirements and Functional Requirements

Client/Server Architecture

- The server remains the central system for data management and interaction handling.
- The JavaFX-based administration application and GUIs for attendance taking will function as clients.

Graphical User Interface for Administration (JavaFX Application)

- A comprehensive JavaFX application will replace the existing console-based interface for administrative tasks.
- Functionalities will include managing user registrations and class/section details (Add/Remove/Update).
- The GUI will be designed to be intuitive and user-friendly to ensure ease of use.

GUI for Taking Attendance

- Deployment for the attendance GUI will be a desktop application.
- The interface will enable faculty to take attendance, modify records, and access reports. It will also allow students to view attendance records and manage notifications.
- The design will focus on simplicity and efficiency to facilitate quick and easy attendance tracking.

Multiple User Registration and Management

- User authentication for faculty, students, and administrators with enhanced security features.
- Batch processing for class enrollment and user registration via CSV file upload will be supported.

Non-Functional Requirements

Usability

- Both the administrative JavaFX application and the GUI for taking attendance will emphasize a minimal learning curve with a clear, easy-to-navigate interface.
- The system will be designed to accommodate users with varying levels of technical proficiency.

Security and Authentication

- Robust encryption and secure authentication mechanisms will be implemented to safeguard sensitive data.
- Role-based access control will be enforced to ensure that users can only access features pertinent to their roles.

Performance and Scalability

- The system will be optimized for performance, handling large data volumes and multiple simultaneous user interactions without lag.
- Scalability will be considered to accommodate future enhancements and user base expansion.

Reliability

- High reliability will be maintained in all functionalities, from attendance tracking to user management and data reporting.

External Interface Requirements

User Interfaces

- The system will offer graphical user interfaces that are compatible across multiple platforms, including Windows, macOS, and Linux.
- Desktop applications will provide comprehensive access and functionality.

Hardware and Software Interfaces

- The system will employ Docker for containerization to ensure consistent operation across different environments.
- Integration with the existing database and system will be streamlined for seamless operation.

Communication Interfaces

- Email and, potentially, SMS or other communication methods will be used for sending notifications and reports.
- The system will ensure compatibility with various email servers and SMS gateways for reliable communication.

Conclusion

AMS version 3.0 is designed to significantly enhance the user experience by introducing GUIs for both administrative tasks and attendance management. These improvements are expected to increase the system's accessibility and efficiency, fulfilling the evolving needs of the university's attendance management process.

Use Case Mapping