Software Requirements Specification (SMS) for School Management System

1 Introduction

1.1 Purpose

Schools in our country have yet to undergo digitalization, even though online-based initiatives are already in place at the college and university levels. However, schools are still lagging behind in keeping pace with modern technology. As a result, students are not becoming adequately familiar with technology and online systems. This leads to significant challenges when they transition to college or university, where they face difficulties adjusting to these new demands. If students were introduced to technology earlier in their school years, it would make the transition much smoother, allowing them to adapt to the digital world more easily. This would also make the daily lives and tasks of both students and teachers more efficient and manageable. This document outlines the functional and non-functional requirements for the development of a School management System(SMS). The system is intended to manage sign up-sign in pages, student enrollment, track attendance, handle grading, assignment, events announcement, and profile setting. It will also automate administrative tasks to ensure the efficient operation of the school.

1.2 Scope

The SMS will handle the following functions:

- Signup & Signin pages for users

- Grading & assessment management

- Student enrollment & management

- Reporting on student performance and attendance

- Attendance tracking

- Setup profile

The system will serve various user groups, including administrators, teachers, and students.

1.3 Definitions, Acronyms, and Abbreviations

- **SMS**: School Management System

- **GUI**: Graphical User Interface

- **API**: Application Programming Interface

- **HTML**: Hypertext Markup Language

- **CSS**: Cascading Style Sheet

1.4 Overview

The School Management System (SMS) is envisioned as a comprehensive, standalone application that modernizes and integrates the various administrative functions within an educational institution. Unlike traditional manual systems that often lead to inefficiencies and miscommunication, the SMS will provide a centralized platform for managing all school-related activities.

2 Overall Description

2.1 Product Perspective

The School Management System is a standalone system designed to replace manual processes currently used in schools. It will provide an integrated solution to manage student records, class information, and academic performance. The system will be built as a web application accessible via browsers, supporting desktop computers and tablets. The SMS will interface with external systems, such as educational databases, via APIs to enrich data and functionalities.

2.2 Product Features

- **Enrollment Management**: Register new students, manage student profiles, and see enrollments.

- **Class Management**: Create and manage classes, including scheduling and enrolled teachers.

- **Attendance Tracking**: Record and track student attendance, generate attendance reports.

- **Grading Management**: Input and manage grades for assessments.

- **Communication Tools**: Facilitate communication between teachers, students through announcements.

- **Showing results & performance**: Showing student performance, attendance statistics, and class schedule for each level.

2.3 User Classes and Characteristics

- **Students**: Registered users who can view their classes, attendance, and grades. They have restricted access to personal academic records.

- **Teachers**: Responsible for managing class content, entering grades, and tracking attendance. They require full access to their assigned courses and student information.

- **Administrators:**: Manage system configurations, user permissions, and adding students and teachers. They have the highest level of access to the system's features.

2.4 Operating Environment

- **Hardware**: Desktop and tablet computers.

- **Operating Systems**: Windows 10, Linux, or macOS for desktop environments.

- **Browsers**: Google Chrome, and Opera.

- **External Systems**: Integration with external APIs for fetching data details.

- **Database**: MongoDB

2.5 Design and Implementation Constraints

- **Compliance**: The system must comply with data privacy regulations such as the General Data Protection Regulation (GDPR) for managing student personal information.

- **Integration**: REST APIs will be used to integrate with external systems for data exchange, including fetching student enrollment data, performance statistics, and attendance records.

- **Security**: All sensitive operations like student data management,teacher data management will be protected .

3 System Features

3.1 Student Enrollment Management

- **Description and Priority**: High priority. This feature allows administrators to manage student enrollments, including registering new students, updating profiles, manage student classes, and events announcement.

- **Stimulus/Response Sequences**:

  1. The admin enters new student details.
  2. The system validates the information and creates a new student profile.
  3. The student data modification by authorise person .

- **Functional Requirements**:

  1. The system must allow the registration of new students with unique IDs.
  2. The system must maintain data confidentiality.

3.2 Attendance Management

- **Description and Priority**: High priority. This feature allows teachers to track and record student attendance.

- **Stimulus/Response Sequences**:

  1. The teacher records attendance during class.
  2. The system stores the attendance record for each student.

- **Functional Requirements**:

  1. The system must allow teachers to record attendance.
  2. The system must generate attendance summaries.

3.3 Grading and Assessment Management

- **Description and Priority**: High priority. This feature handles the input and management of grades for assessments.

- **Stimulus/Response Sequences**:

  1. The teacher enters grades for assessments.
  2. The system validates the grades and stores them in the student profile.

- **Functional Requirements**:

  1. The system must allow the input and modification of grades.
  2. The system must store historical assessment data for each student.

3.4 Events Announcement

- **Description and Priority**: Medium priority. This feature facilitates give announcement and important notice among teachers, students,visitors of websites.

- **Stimulus/Response Sequences**:

  1. The teacher and administrators creates an announcement.
  2. The system delivers the announcement to students, teachers and all visitors of web portal.

- **Functional Requirements**:

  1. The system must allow the creation and delivery of announcements.
  2. The system must notify teachers and students of important updates.

4 External Interface Requirements

4.1 User Interfaces

- The system will offer a web-based interface accessible via browsers, featuring:

  1. An authentication (signin-signup) pages for all users
  2. A dashboard for students, teachers, and administrators.
  3. Attendance tracking and grade reports for teachers.
  4. Profile and academic history for students.
  5. Administrative functions like adding students and managing class schedules.
  6. An announcement and notice board section for all users to update.

4.2 Software Interfaces

- **External APIs** : The system must interface with external databases for managing student records, attendance, and performance data.

4.3 Communications Interfaces

- The system will use HTTPS for all communications between the web application and the server, ensuring secure data transmission.

5 Nonfunctional Requirements

5.1 Performance Requirements

- The system must respond to user requests (e.g., enrollment or attendance tracking) in under 3 seconds.

- The system must support 50 concurrent users without degradation in performance.

5.2 Safety Requirements

- The system will maintain data confidentiality.

- The system must ensure data integrity during concurrent read/write operations.

5.3 Security Requirements

- **User Authentication**: All users must log in with a unique username and password.

- **Role-Based Access Control**: Different access levels for administrators, teachers, and students.

5.4 Software Quality Attributes

- **Usability:** The system must be intuitive for non-technical users like teachers and administrators, with a simple and accessible interface.

- **Maintainability:** The system must be modular to allow future updates without impacting existing functionality.

- **Reliability:** The system must be available with **99.9% uptime**.

6　Other Requirements

- **Internationalization:** The system should support multiple languages, such as English, Bengali, and others, based on the user base.

- **Database Storage:** The database must store up to 100,000 student records, 10,000 teacher records, and class schedules for each academic year.

This revised document now focuses on the key features of a School Management System and is structured accordingly with details about the system features, user requirements, interface requirements, and performance expectations.