FUNCTIONAL REQUIREMENT AND SPECIFICATION DOCUMENT

(STUDENT MANAGEMENT SYSTEM)

CREATED BY : SHIVANI NEGI

In case of any queries regarding this document please reach out to Shivani Negi at shivani74negi@gmail.com

DECISION REVISION

DATE	VERSION NUMBER	DOCUMENT CHANGE

APPROVALS

ROLE	NAME	TITLE	SIGNATURE	DATE
Project Sponsor				
Business Owner				
Project Manager				
System Architect				

INDEX

INTRODUCTION

This document outlines the functional requirements for the Student Management System (SMS) for "XYZ" Education Institute. The purpose of this system is to digitize the existing paper-based process for managing student details, attendance, exam schedules, and results. The SMS will streamline these processes, improve efficiency, and enhance data accuracy.

PROJECT SUMMARY

OBJECTIVE

The primary objectives of the Student Management System are:

- **Digitize Student Records**: Convert all student records from paper to digital format to ensure easy access and management.
- **Improve Data Accuracy**: Reduce errors associated with manual data entry and ensure data consistency across all modules.
- **Enhance Efficiency**: Streamline administrative tasks such as attendance tracking, exam scheduling, and result management to save time and resources.
- **Provide Real-Time Access**: Enable students, teachers, and parents to access relevant information in real-time from anywhere.
- **Secure Data Management**: Implement robust security measures to protect sensitive student information from unauthorized access.

BACKGROUND

"XYZ" Education Institute has been using a paper-based system to manage various student-related processes. This traditional method has several drawbacks:

- **Time-Consuming**: Manual data entry and retrieval processes are slow and inefficient.
- **Prone to Errors**: Handwritten records are susceptible to mistakes, leading to inaccuracies in student data.
- **Limited Accessibility**: Physical records can only be accessed from specific locations, limiting the ability to share information quickly.
- **Storage Issues**: Managing a large volume of paper records requires significant physical storage space.
- **Data Security Risks**: Paper records are vulnerable to loss, damage, and unauthorized access.

To address these challenges, the institute has decided to implement a digital Student Management System.

BUSINESS DRIVERS

The implementation of the Student Management System is driven by the following business needs:

- **Operational Efficiency**: By automating and digitizing key administrative processes, the institute can reduce the workload on staff and improve overall operational efficiency.
- **Enhanced Decision-Making**: Real-time access to accurate data will enable administrators and teachers to make informed decisions regarding student management and resource allocation.
- **Improved Student Experience**: Providing students and parents with easy access to attendance records, exam schedules, and results will enhance their overall experience and satisfaction.
- **Compliance and Reporting**: A digital system will facilitate compliance with regulatory requirements and make it easier to generate reports for internal and external stakeholders.
- **Competitive Advantage**: Adopting modern IT solutions will position the institute as a forward-thinking and technologically advanced organization, attracting more students and staff.

PROJECT SCOPE

The Student Management System (SMS) for "XYZ" Education Institute encompasses a comprehensive range of functionalities aimed at digitizing and streamlining student-related administrative processes. The project scope includes the development, implementation, and maintenance of the system, ensuring it meets the needs of all stakeholders. The SMS will consist of four primary modules: Student Details, Attendance Details, Exam Schedules, and Results. Each module will be equipped with specific features designed to enhance operational efficiency, data accuracy, and user experience.

IN-SCOPE FUNCTIONALITY

The following functionalities are included within the scope of the Student Management System:

STUDENT DETAILS

- ***Student Registration :*** Digitally capture and store personal information and academic details of new students.
- ***Student Profile Management :*** Enable authorized personnel to update student information, such as contact details, address, and academic records.

- ***Search and View Student Details :*** Provide a robust search functionality to quickly retrieve student records based on various criteria like name, ID, or class.

ATTENDANCE DETAILS

- ***Mark Attendance :*** Allow teachers to mark daily attendance for each class, tracking student presence and absences.
- ***View Attendance Records :*** Enable students, parents, and teachers to view attendance records for specific dates or periods.
- ***Generate Attendance Reports :*** Create detailed attendance reports for administrative and reporting purposes.

EXAM SCHEDULES

- ***Create Exam Schedules :*** Allow administrators to create and publish detailed exam schedules, including subjects, dates, times, and venues.
- ***View Exam Schedule :*** Provide students and teachers access to upcoming exam schedules.
- ***Update Exam Schedule :*** Allow authorized personnel to update existing schedules and notify stakeholders of any changes.

RESULTS

- ***Enter Exam Results :*** Enable teachers to input and update students' exam scores.
- ***View Exam Results :*** Provide students and parents with access to exam results.
- ***Generate Result Reports :*** Create detailed reports on student performance for academic reviews and reporting.

OUT-OF-SCOPE FUNCTIONALITY

The following functionalities are explicitly excluded from the scope of the Student Management System:

- **Learning Management System (LMS) Integration**: Integration with external LMS platforms is not included.

- **Financial Management :** Handling of student fees, payments and other financial transactions.
- **Library Management :** Managing library resources, book issuance and returns.
- **Hostel Management :** Managing hostel accommodations including room assignments and maintenance.
- **Transport Management :** Managing transportation services including bus routes and schedules.
- **Extracurricular Activities :** Scheduling and managing extracurricular activities, clubs and sports events.

DELIVERABLES

The project will deliver the following key components:

- **Student Management System Application**: A fully functional web-based application accessible by all stakeholders.
- **User Documentation**: Comprehensive user manuals and guides for administrators, teachers, students, and parents.
- **Training Sessions**: Conduct training sessions for users to ensure smooth transition and adoption of the new system.
- **Technical Documentation**: Detailed technical documentation for the IT department to facilitate system maintenance and future enhancements.

PROJECT BOUNDARIES

The project boundaries define the limits within which the SMS will operate:

- **Geographical Scope**: The SMS will be implemented across all campuses of "XYZ" Education Institute.
- **User Scope**: The system will be accessible to administrators, teachers, students, parents, and the IT department.
- **Technology Scope**: The system will be web-based, utilizing modern web technologies and accessible via standard web browsers.

CONSTRAINTS AND ASSUMPTIONS

The following constraints and assumptions apply to the project:

Constraints:

- Budget limitations may impact the scope and features of the system.
- Project timeline must align with the academic calendar to minimize disruptions.

- Data migration from paper records to the digital system must be completed accurately and securely.

Assumptions:

- Reliable internet connectivity will be available for all users.
- Necessary hardware and software infrastructure will be provided by the institute.
- Users will receive adequate training to effectively use the system.

BUSINESS PROCESS OVERVIEW

STUDENT DETAILS MANAGEMENT

Current Process:

- New student registrations are done manually, with personal and academic details recorded on paper forms.
- Updates to student information (e.g., address changes, contact information) require physical form submissions and manual updates in paper records.
- Retrieving student information involves searching through physical files, which is time-consuming and prone to errors.

Future Process with SMS:

- **Student Registration**: The SMS will allow for online registration of new students, capturing all necessary personal and academic details electronically. This data will be stored in a centralized database, accessible to authorized personnel.
- **Student Profile Management**: Authorized staff can update student details directly in the system, ensuring real-time updates and reducing the risk of errors.
- **Search and Retrieval**: The system will provide robust search capabilities, enabling quick retrieval of student information based on various criteria such as name, ID, or class.

Benefits:

- Improved accuracy and consistency of student data.
- Reduced time and effort required for data entry and updates.
- Enhanced accessibility and faster retrieval of student information.

ATTENDANCE MANAGEMENT

Current Process:

- Teachers manually record student attendance in logbooks.
- Attendance data is periodically compiled and submitted to the administration for record-keeping.
- Tracking and reporting attendance trends involve manual data aggregation, which is labour-intensive and error-prone.

Future Process with SMS:

- **Mark Attendance**: Teachers can mark daily attendance electronically through the SMS, with data being stored in real-time.
- **Attendance Records Access**: Students, parents, and teachers can view attendance records through a user-friendly interface, allowing for greater transparency.
- **Reporting**: The system can generate attendance reports automatically, providing insights into attendance patterns and identifying students with attendance issues.

Benefits:

- Increased accuracy in attendance records.
- Simplified attendance tracking and reporting processes.
- Improved visibility of attendance data for students and parents.

EXAMS SCHEDULING

Current Process:

- Exam schedules are created manually, often requiring coordination between various departments.
- Schedules are distributed through printed notices and manual notifications.
- Changes to exam schedules involve updating and redistributing physical copies, which can be inefficient and lead to communication gaps.

Future Process with SMS:

- **Create Exam Schedule**: Administrators can create and publish exam schedules electronically, with automated notifications sent to students and teachers.
- **View Exam Schedule**: All stakeholders can access up-to-date exam schedules through the SMS, ensuring they are aware of any changes.
- **Update Exam Schedule**: Authorized personnel can make changes to the schedule in the system, with notifications automatically sent to affected parties.

Benefits:

- Streamlined creation and distribution of exam schedules.
- Reduced risk of miscommunication regarding schedule changes.
- Increased accessibility to exam schedules for all stakeholders.

RESULTS MANAGEMENT

Current Process:

- Exam results are compiled manually by teachers and recorded on paper.
- Results are communicated to students and parents through printed report cards.
- Generating detailed performance reports involves manual data entry and aggregation, which is time-consuming.

Future Process with SMS:

- **Enter Exam Results**: Teachers can input exam scores directly into the system, ensuring immediate availability of results.
- **View Exam Results**: Students and parents can access exam results through the SMS, eliminating the need for physical report cards.
- **Generate Reports**: The system can produce detailed performance reports automatically, providing valuable insights into student performance and academic trends.

Benefits:

- Faster and more accurate recording of exam results.
- Improved accessibility of results for students and parents.
- Enhanced ability to generate detailed performance reports for analysis.

FUNCTIONAL REQUIREMENTS

Student Details Management:

- **Capture and Store:** The system should capture and store detailed information about students, including their names, date of birth, gender, address, contact details, enrolment date, class enrolled, and status (active, inactive, graduated).
- **Update and Maintain:** Users should be able to update student information as necessary and maintain accurate records over time.

Attendance Management:

- **Recording Attendance:** Teachers should be able to record student attendance for each class session.
- **Viewing and Reporting:** Administrators and teachers should be able to view attendance records, generate attendance reports, and identify patterns of attendance.

➢ ***Exam Schedules:***

- **Scheduling Exams:** Administrators should be able to create and manage exam schedules, including dates, times, subjects, and venues.

- **Notification:** Students should receive notifications about upcoming exams to help them prepare adequately.

Results Management:

- **Recording Results:** Teachers should be able to record and enter exam results for each student.
- **Result Calculation:** The system should calculate and store marks obtained, total marks, and grades based on predefined criteria.
- **Result Access:** Students and parents should be able to access their results securely through the system.

User Management:

- **Authentication:** The system should authenticate users (administrators, teachers, students, and parents) securely with username and password.
- **Authorization:** Role-based access control should restrict functionalities based on user roles (e.g., admin can perform all functions, students can only view their own data).

Notifications:

- **Communication:** The system should send notifications (e.g., regarding attendance, exams, results) to students, parents, and teachers via email or within the system.
- **Read Confirmation:** Users should be able to confirm or mark notifications as read.

Basic Flow

A) Student Registration

Actors: Admin

Preconditions:

- Admin is logged into the system.

Main Flow:

1. Admin selects "Register New Student".
2. Admin enters student details (name, DOB, address, contact information, class, roll number, etc.).
3. Admin submits the form.
4. System saves the student details and generates a unique student ID.
5. System confirms the registration and displays the student ID.

Postconditions:

- Student is successfully registered in the system.

Exceptions:

- If any mandatory field is missing, the system prompts the admin to complete it.

B) Manage Student Details

Actors: Admin

Preconditions:

- Admin is logged into the system.
- Student is already registered.

Main Flow:

1. Admin searches for the student by name or ID.
2. System displays the student profile.
3. Admin updates the necessary details.
4. Admin submits the changes.
5. System saves the updated details.
6. System confirms the update.

Postconditions:

- Student details are successfully updated.

Exceptions:

- If the student ID is not found, the system displays an error message.

C) Mark Attendance

Actors: Teacher

Preconditions:

- Teacher is logged into the system.
- Class schedule is available.

Main Flow:

1. Teacher selects the class and date.
2. System displays the student list for that class.
3. Teacher marks each student as present or absent.
4. Teacher submits the attendance.
5. System saves the attendance record.
6. System confirms the attendance is recorded.

Postconditions:

- Attendance is successfully recorded for the class.

Exceptions:

- If the class schedule is not found, the system displays an error message.

D) View Attendance Records

Actors: Student, Parent/Guardian, Teacher

Preconditions:

- User is logged into the system.

Main Flow:

1. User selects "View Attendance Records".
2. User chooses the student and date range.
3. System retrieves and displays the attendance records for the selected period.

Postconditions:

- Attendance records are successfully displayed.

Exceptions:

- If no records are found, the system displays a "No records found" message.

E) Create Exam Schedule

Actors: Admin

Preconditions:

- Admin is logged into the system.

Main Flow:

1. Admin selects "Create Exam Schedule".
2. Admin enters exam details (subject, date, time, venue, etc.).
3. Admin submits the schedule.
4. System saves the exam schedule.
5. System confirms the schedule is created and notifies relevant users.

Postconditions:

- Exam schedule is successfully created and notified.

Exceptions:

- If any mandatory field is missing, the system prompts the admin to complete it.

F) View Exam Schedule

Actors: Student, Teacher

Preconditions:

- User is logged into the system.

Main Flow:

1. User selects "View Exam Schedule".
2. System retrieves and displays the upcoming exam schedules.

Postconditions:

- Exam schedules are successfully displayed.

Exceptions:

- If no schedules are found, the system displays a "No schedules found" message.

G) Enter Exam Results

Actors: Teacher

Preconditions:

- Teacher is logged into the system.
- Exam has been conducted.

Main Flow:

1. Teacher selects "Enter Exam Results".
2. Teacher chooses the exam and student.
3. Teacher enters the exam scores.
4. Teacher submits the results.
5. System saves the exam results.
6. System confirms the results are recorded.

Postconditions:

- Exam results are successfully recorded.

Exceptions:

- If the exam or student ID is not found, the system displays an error message

H) View Exam Results

Actors: Student, Parent/Guardian

Preconditions:

- User is logged into the system.

Main Flow:

1. User selects "View Exam Results".
2. User chooses the student and exam.
3. System retrieves and displays the exam results.

Postconditions:

- Exam results are successfully displayed.

Exceptions:

- If no results are found, the system displays a "No results found" message.

NON-FUNCTIONAL REQUIREMENTS

Performance

- *Requirement:* The system shall respond to user actions within 3 seconds.
- *Description:* Ensure fast loading and interaction times.
- *Acceptance Criteria:* Page load and data processing times should not exceed 3 seconds under normal load conditions.

Security

- *Requirement:* The system shall ensure data security through encryption and access controls.
- *Description:* Protect sensitive student information from unauthorized access.
- *Acceptance Criteria:* Data must be encrypted in transit and at rest, and role-based access controls must be implemented.

Usability

- *Requirement:* The system shall provide a user-friendly interface.
- *Description:* Ensure ease of use for all user roles.

- *Acceptance Criteria:* User interfaces should be intuitive, and user feedback mechanisms should be in place to gather usability improvements.

Scalability

- *Requirement:* The system shall support up to 10,000 concurrent users.
- *Description:* Handle growth in user base without performance degradation.
- *Acceptance Criteria:* System performance should remain stable and responsive as the user base scales up.

Reliability

- *Requirement:* The system shall have an uptime of 99.9%.
- *Description:* Ensure high availability and minimal downtime.
- *Acceptance Criteria:* System logs should show uptime statistics meeting or exceeding 99.9%.

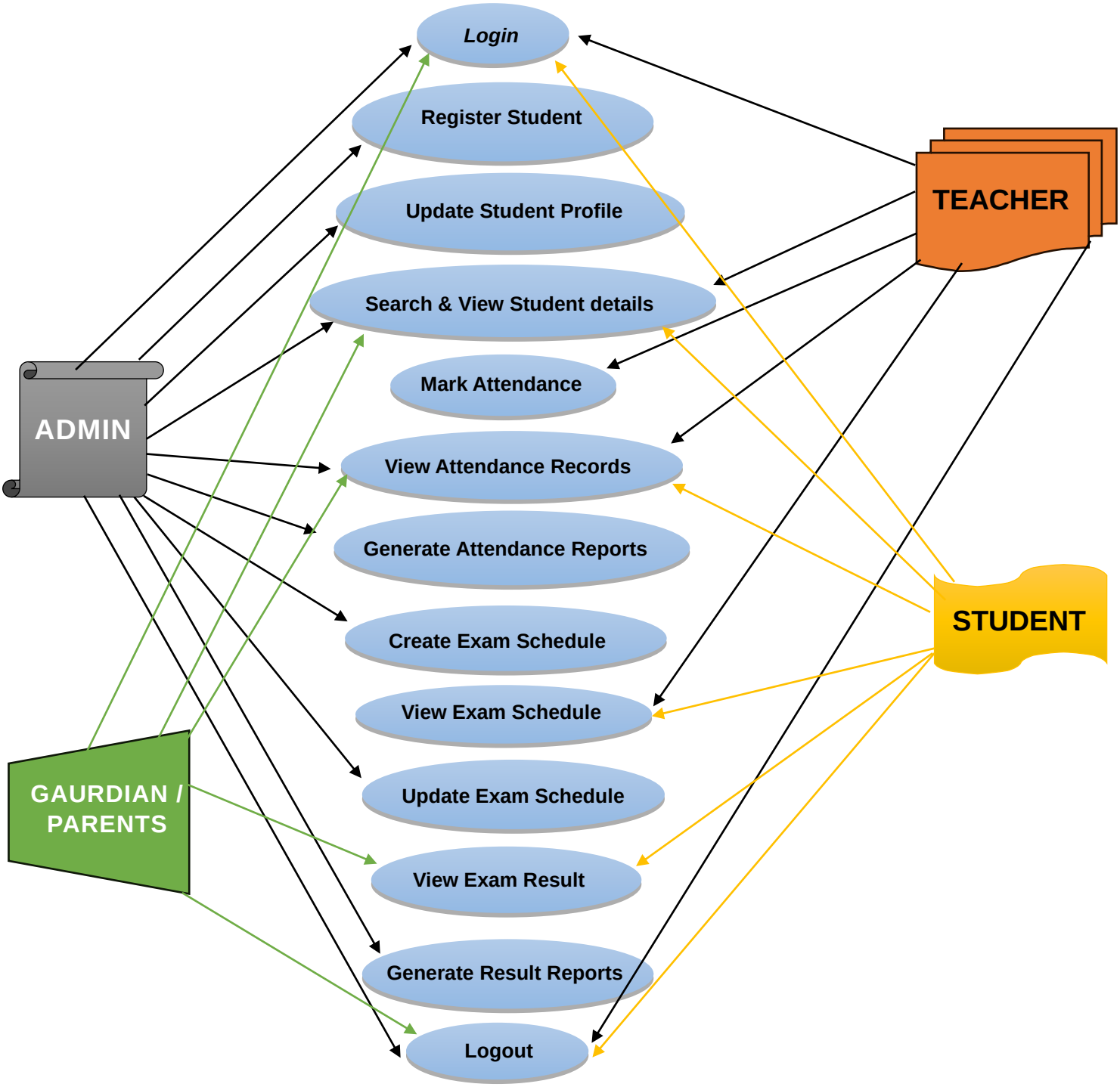
Maintainability

- *Requirement:* The system shall be easy to maintain and update.
- *Description:* Facilitate regular updates and troubleshooting.
- *Acceptance Criteria:* System architecture and codebase should follow best practices for maintainability, and documentation should be thorough.

Compliance

- *Requirement:* The system shall comply with relevant data protection regulations.
- *Description:* Adhere to standards such as GDPR and FERPA.
- *Acceptance Criteria:* Regular audits should show compliance with relevant data protection laws.

USE CASE DIAGRAM



Explanation of the Use Case Diagram

- **Admin:** The admin has the capabilities to register students, update student profiles, create and update exam schedules, generate attendance and result reports, and search and view student details.
- **Teacher:** The teacher is responsible for marking attendance, entering exam results, and viewing attendance records. They can also view exam schedules.
- **Student:** The student can view their own attendance records and exam schedules, as well as their exam results.
- **Parent/Guardian:** Parents or guardians can view their child's attendance records and exam results.

DATA DICTIONARY

Student Details

Field Name	Data Type	Description	Constraints/Notes	Business Rule	Error Message
StudentID	Integer	Unique identifier for each student	Primary Key, Auto-incremented	Must be unique for each student	"Student ID must be unique."
FirstName	Varchar(50)	First name of the student	Not Null	Cannot be null or empty	"First name is required."
LastName	Varchar(50)	Last name of the student	Not Null	Cannot be null or empty	"Last name is required."
DateOfBirth	Date	Date of birth of the student	Not Null	Must be a valid date	"Date of birth is required and must be a valid date."
Gender	Varchar(10)	Gender of the student	Values: 'Male', 'Female', 'Other'	Must be one of the predefined values	"Gender must be 'Male', 'Female', or 'Other'."
Address	Varchar(255)	Residential address of the student	Not Null	Cannot be null or empty	"Address is required."

City	Varchar(50)	City of residence	Not Null	Cannot be null or empty	"City is required."
State	Varchar(50)	State of residence	Not Null	Cannot be null or empty	"State is required."
PostalCode	Varchar(10)	Postal code of the residence	Not Null	Must be a valid postal code	"Postal code is required and must be valid."
ContactNumber	Varchar(15)	Contact number of the student or guardian	Not Null	Must be a valid phone number	"Contact number is required and must be valid."
Email	Varchar(100)	Email address of the student or guardian	Unique, Not Null	Must be a valid email address	"Email is required and must be unique and valid."
EnrollmentDate	Date	Date when the student was enrolled	Not Null	Must be a valid date	"Enrollment date is required and must be valid."
ClassID	Integer	Identifier for the class the student is enrolled in	Foreign Key referencing Class(ClassID)	Must reference an existing ClassID	"Class ID must reference an existing class."
Status	Varchar(20)	Current status of the student	Values: 'Active', 'Inactive', 'Graduated'	Must be one of the predefined values	"Status must be 'Active', 'Inactive', or 'Graduated'."

Class Details

Field Name	Data Type	Description	Constraints/Notes	Business Rule	Error Message
ClassID	Integer	Unique identifier for each class	Primary Key, Auto-incremented	Must be unique for each class	"Class ID must be unique."

ClassName	Varchar(50)	Name of the class	Not Null	Cannot be null or empty	"Class name is required."
ClassTeacher	Varchar(100)	Name of the class teacher	Not Null	Cannot be null or empty	"Class teacher is required."
AcademicYear	Varchar(9)	Academic year for the class	Format: 'YYYY-YYYY'	Must follow the format 'YYYY-YYYY'	"Academic year must follow the format 'YYYY-YYYY'."

Attendance Details

Field Name	Data Type	Description	Constraints/Notes	Business Rule	Error Message
AttendanceID	Integer	Unique identifier for each attendance record	Primary Key, Auto-incremented	Must be unique for each record	"Attendance ID must be unique."
StudentID	Integer	Identifier for the student	Foreign Key referencing Student(StudentID)	Must reference an existing StudentID	"Student ID must reference an existing student."
ClassID	Integer	Identifier for the class	Foreign Key referencing Class(ClassID)	Must reference an existing ClassID	"Class ID must reference an existing class."
Date	Date	Date of the attendance	Not Null	Must be a valid date	"Date is required and must be valid."
Status	Varchar(10)	Attendance status	Values: 'Present', 'Absent', 'Late'	Must be one of the predefined values	"Status must be 'Present', 'Absent', or 'Late'."

Exam Schedules

Field Name	Data Type	Description	Constraints/Notes	Business Rule	Error Message

ExamScheduleID	Integer	Unique identifier for each exam schedule	Primary Key, Auto-incremented	Must be unique for each schedule	"Exam Schedule ID must be unique."
ClassID	Integer	Identifier for the class	Foreign Key referencing Class(ClassID)	Must reference an existing ClassID	"Class ID must reference an existing class."
Subject	Varchar(50)	Subject of the exam	Not Null	Cannot be null or empty	"Subject is required."
ExamDate	Date	Date of the exam	Not Null	Must be a valid date	"Exam date is required and must be valid."
StartTime	Time	Start time of the exam	Not Null	Must be a valid time	"Start time is required and must be valid."
EndTime	Time	End time of the exam	Not Null	Must be a valid time	"End time is required and must be valid."
Venue	Varchar(100)	Location where the exam will be held	Not Null	Cannot be null or empty	"Venue is required."

Exam Results

Field Name	Data Type	Description	Constraints/Notes	Business Rule	Error Message
ResultID	Integer	Unique identifier for each exam result	Primary Key, Auto-incremented	Must be unique for each result	"Result ID must be unique."
StudentID	Integer	Identifier for the student	Foreign Key referencing Student(StudentID)	Must reference an existing StudentID	"Student ID must referenc e an

					existing student."
ExamScheduleID	Integer	Identifier for the exam schedule	Foreign Key referencing ExamSchedule(ExamScheduleID)	Must reference an existing ExamScheduleID	"Exam ScheduleID must reference an existing schedule."
MarksObtained	Integer	Marks obtained by the student	Not Null	Must be a valid integer value	"Marks obtained is required and must be valid."
TotalMarks	Integer	Total marks for the exam	Not Null	Must be a valid integer value	"Total marks is required and must be valid."
Grade	Varchar(2)	Grade awarded to the student	Values: 'A', 'B', 'C', 'D', 'F'	Must be one of the predefined values	"Grade must be 'A', 'B', 'C', 'D', or 'F'."

Users

Field Name	Data Type	Description	Constraints/Notes	Business Rule	Error Message
UserID	Integer	Unique identifier for each user	Primary Key, Auto-incremented	Must be unique for each user	"User ID must be unique."
Username	Varchar(50)	Username for login	Unique, Not Null	Must be unique and not null	"Username is required and must be unique."
Password	Varchar(255)	Password for login	Encrypted, Not Null	Must be encrypted and not null	"Password is required."

Role	Varchar(20)	Role of the user	Values: 'Admin', 'Teacher', 'Student', 'Parent'	Must be one of the predefined values	"Role must be 'Admin', 'Teacher', 'Student', or 'Parent'."

Notifications

Field Name	Data Type	Description	Constraints/Notes	Business Rule	Error Message
NotificationID	Integer	Unique identifier for each notification	Primary Key, Auto-incremented	Must be unique for each notification	"Notification ID must be unique."
UserID	Integer	Identifier for the user receiving the notification	Foreign Key referencing Users(UserID)	Must reference an existing UserID	"User ID must reference an existing user."
Message	Varchar(255)	Notification message	Not Null	Cannot be null or empty	"Message is required."
DateSent	DateTime	Date and time the notification was sent	Not Null	Must be a valid datetime	"Date sent is required and must be valid."
Status	Varchar(10)	Read status of the notification	Values: 'Read', 'Unread'	Must be one of the predefined values	"Status must be 'Read' or 'Unread'."

Relationships Between Tables

- **Student** and **Class**: A class can have multiple students (one-to-many relationship).
- **Student** and **Attendance**: A student can have multiple attendance records (one-to-many relationship).
- **Class** and **Attendance**: A class can have multiple attendance records (one-to-many relationship).
- **Class** and **ExamSchedule**: A class can have multiple exam schedules (one-to-many relationship).

- **Student** and **ExamResults**: A student can have multiple exam results (one-to-many relationship).
- **ExamSchedule** and **ExamResults**: An exam schedule can have multiple exam results (one-to-many relationship).
- **User** and **Notifications**: A user can receive multiple notifications (one-to-many relationship).

GLOSSARY AND DEFINITIONS

- **Administrator (Admin)**: A user with the highest level of control over the Student Management System, responsible for registering students, updating profiles, creating schedules, generating reports, and managing system settings.
- **Attendance Management**: The process of recording, storing, and retrieving student attendance information, allowing teachers to mark attendance and generate attendance reports.
- **Business Drivers**: The fundamental reasons or needs that drive the implementation of the Student Management System, such as operational efficiency, enhanced decision-making, improved student experience, compliance, and competitive advantage.
- **Compliance**: Adherence to relevant data protection regulations, ensuring the system meets standards such as GDPR and FERPA to protect student information.
- **Data Dictionary**: A structured repository of data elements used in the system, detailing field names, data types, descriptions, constraints, business rules, and error messages.
- **Digitization**: The process of converting information from physical format to digital format, enabling easier storage, retrieval, and management.
- **Exam Scheduling**: The process of creating, updating, and managing exam timetables, including subjects, dates, times, and venues.
- **Functional Requirements**: Specific behaviors or functions the system must perform, such as capturing student details, managing attendance, scheduling exams, and recording results.
- **Non-Functional Requirements**: Criteria that describe the operation of the system, including performance, security, usability, scalability, reliability, maintainability, and compliance.
- **Results Management**: The process of recording, storing, and retrieving student exam results, allowing teachers to enter scores and generate performance reports.
- **Role-Based Access Control (RBAC)**: A method of regulating access to the system based on the roles of individual users, ensuring that users can only access functionalities pertinent to their roles.
- **Scalability**: The system's ability to handle an increasing number of users or operations without compromising performance.
- **Student Management System (SMS)**: A digital solution designed to manage student records, attendance, exam schedules, and results, improving efficiency and data accuracy.
- **System Architect**: A professional responsible for the design and implementation of the system's technical infrastructure.
- **Use Case Diagram**: A visual representation of the system's functionalities and the interactions between different user roles (Admin, Teacher, Student, Parent/Guardian) and the system.
- **User Documentation**: Manuals and guides provided to help users understand and effectively use the system.
- **User Management**: The process of managing user authentication and authorization within the system, ensuring secure access based on user roles.