



BANGLADESH UNIVERSITY OF BUSINESS AND TECHNOLOGY (BUBT)
SCHOOL ATTENDANCE MANAGEMENT SYSTEM (SAS)
CSE 417
Distributed Database Management Systems Lab

Submitted by:

Most. Sonia Islam (ID: 21225103101)
Farzana Yesmin Rimi (ID: 21225103121)
Lamiya Akter Kakon (ID: 21225103125)
Lamia Muntaha (ID: 21225103185)
Humayra Kabir Hride (ID: 21225103501)

Submitted to:

Sweety Lima, Lecturer
Department of Computer Science and Engineering

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Declaration

We hereby declare that our project titled **“School Attendance Management System (SAS)”** submitted for the Distributed Database Management Systems Lab course at Bangladesh University of Business and Technology (BUBT) is our own original work. We have followed academic integrity, properly cited any external sources, and pledged to uphold academic ethics.

Most. Sonia Islam (ID: 21225103101)
Farzana Yesmin Rimi (ID: 21225103121)
Lamiya Akter Kakon (ID: 21225103125)
Lamia Muntaha (ID: 21225103185)
Humayra Kabir Hride (ID: 21225103130)

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Abstract

The **School Attendance Management System (SAS)** is a distributed database-based web application designed to simplify attendance management across multiple school grades. The project ensures scalability, efficiency, and data security. SAS leverages a distributed database architecture with multiple databases (`sas_six`, `sas_seven`, `sas_eight`, `sas_other`) to provide better load distribution and faster data retrieval. Its features include attendance tracking, role-based access, and Excel report generation, making it a reliable tool for school administrators, teachers, and students.

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1. Introduction

1.1 Motivation

Managing attendance efficiently in schools is a critical task that becomes increasingly challenging with larger student populations. Traditional methods, such as paper-based records or centralized databases, are prone to inefficiencies, data redundancy, and security vulnerabilities. The need for a modern, reliable, and scalable system motivated the development of SAS to address these challenges effectively.

1.2 Project Overview

The **School Attendance Management System (SAS)** is a web-based application that utilizes distributed database management principles to streamline attendance processes. It is designed for administrators, teachers, and students, offering role-based access and functionalities such as attendance tracking, reporting, and management of class-specific data.

1.3 Project Scope

The SAS project focuses on managing attendance for multiple grades using a distributed database architecture. The system ensures data integrity, scalability, and ease of access while providing tailored functionalities for different user roles. Future expansion possibilities include biometric integrations and advanced analytics for trend analysis.

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2. Literature Review

2.1 Technological Components

The project employs the following technologies:

- **Frontend:** HTML, CSS, JavaScript for user-friendly interfaces.
- **Backend:** PHP for server-side logic and database interactions.
- **Database:** MySQL (via XAMPP), structured to leverage distributed database architecture for optimal performance.

2.2 Methodology

The project development followed these stages:

1. **Requirement Specification:** Identifying essential features like attendance tracking and role-based access.
2. **Design:** Architecting a distributed database system and defining user interfaces.
3. **Implementation:** Developing the system using PHP and MySQL, ensuring dynamic database connections for each class.
4. **Validation:** Rigorous testing to ensure functionality, security, and performance across all modules.

3. Requirement Analysis

3.1 Hardware Requirements

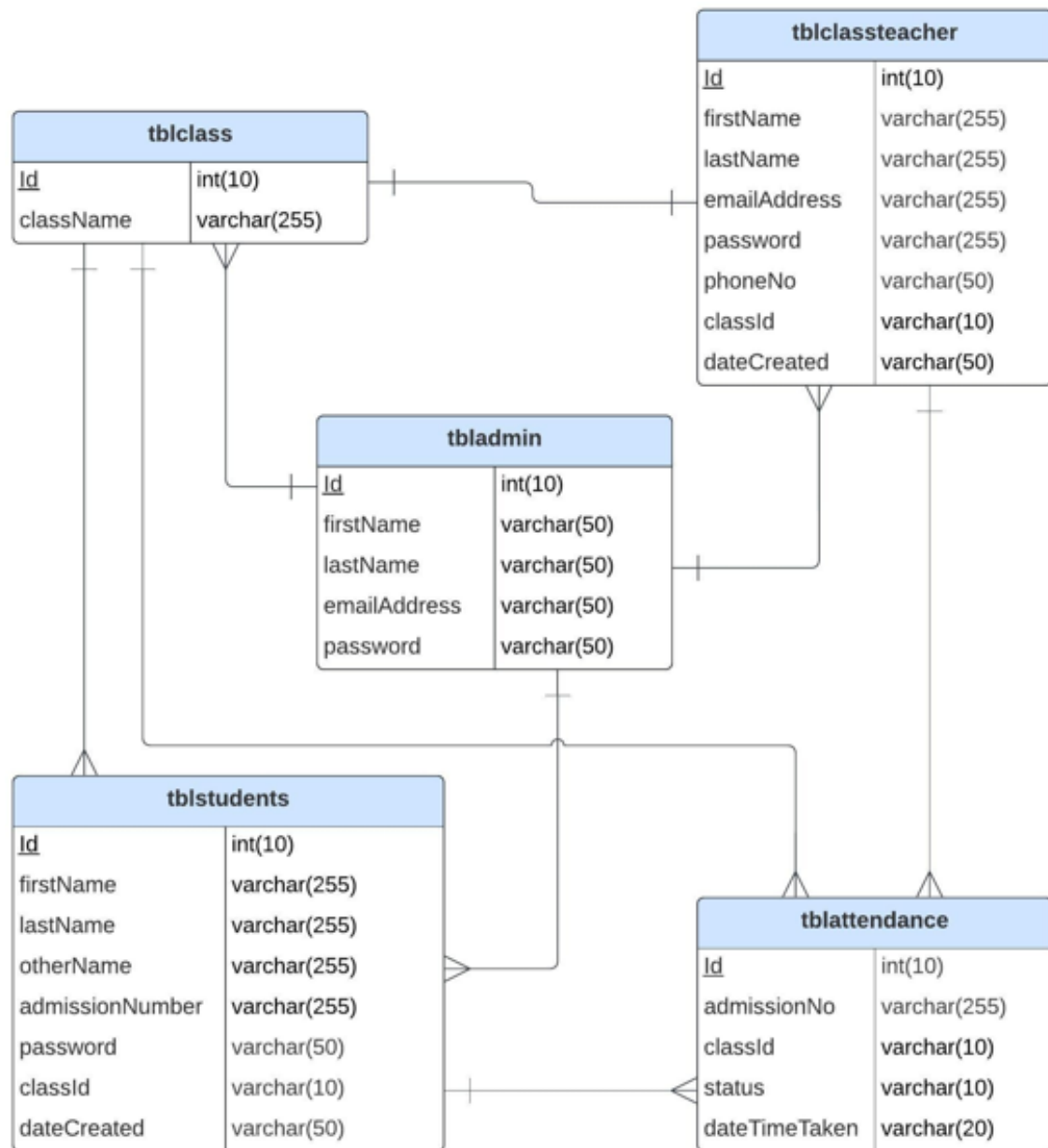
- **Computer:** Minimum specifications include 16 GB RAM, 256 GB SSD.
- **Peripherals:** Keyboard and mouse for efficient interaction.

3.2 Software Requirements

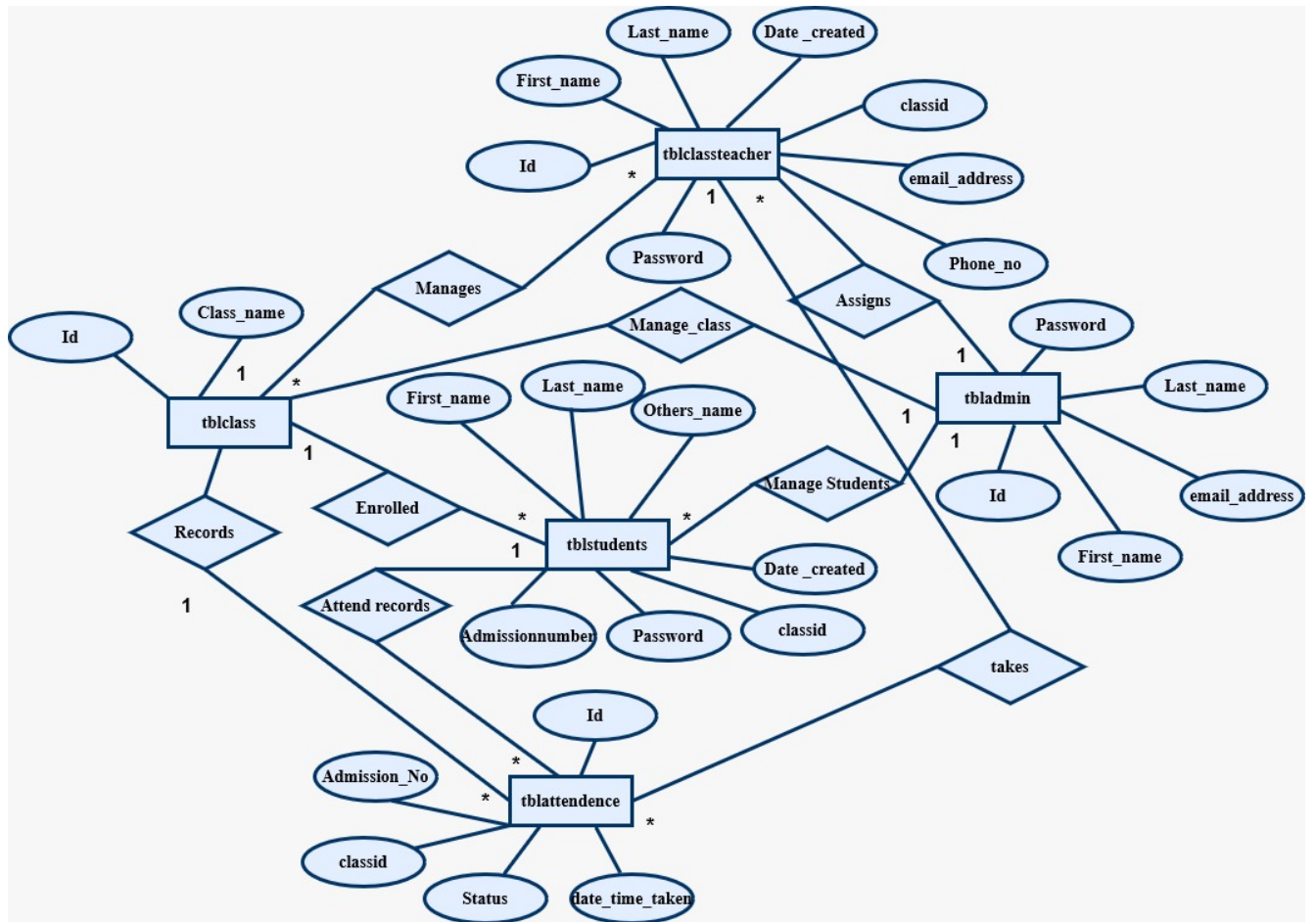
- **Frontend:** HTML, CSS, JavaScript.
- **Backend:** PHP (XAMPP for local development).
- **Database:** MySQL.
- **Hosting Platform:** InfinityFree (for deployment).

4. System Analysis and Design

4.1 Schema Diagram



4.2 ER Diagram



5. Implementation and Testing

5.1 Implementation Process

The implementation phase involved:

- Coding dynamic database connections to handle multiple databases (`sas_six`, `sas_seven`, `sas_eight`, and `sas_other`).
- Developing role-based panels for administrators, teachers, and students.
- Integrating features for attendance tracking and report generation in Excel format.

5.2 Testing Results


The system underwent extensive testing to ensure:

- **Performance:** Faster query execution times compared to centralized systems.
- **Functionality:** Seamless operation of all modules, including user authentication and database connections.
- **Scalability:** Ability to add new classes by introducing additional databases.

6. User Manual

6.1 Login Page

STUDENT ATTENDANCE SYSTEM



Login Panel

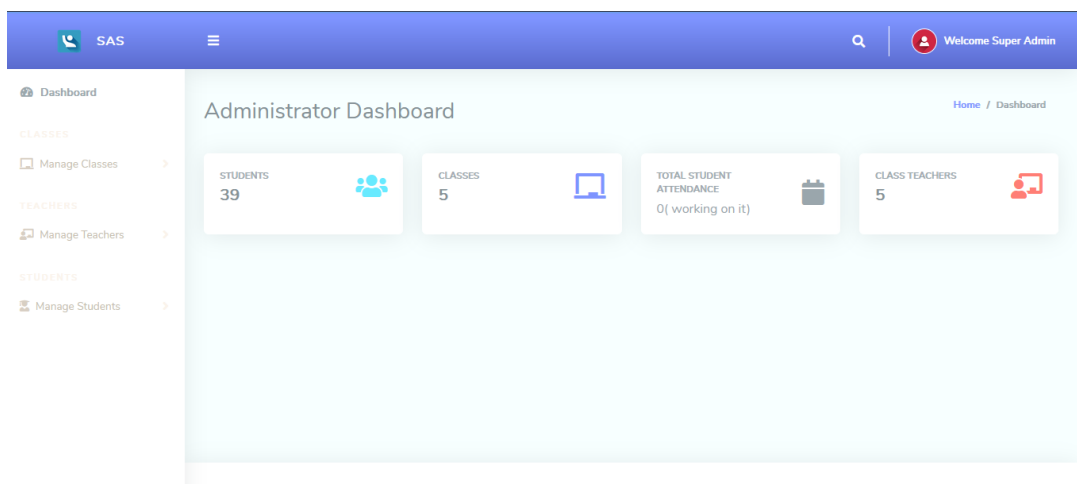
--Select User Roles--

Enter Email Address

Enter Password

Login

6.2 Admin Panel



Dashboard

CLASSES

Manage Classes

TEACHERS

Manage Teachers

STUDENTS

Manage Students

Create Class

Home / Create Class

Create Class

Class Name *

Select Class

Save

All Classes

#	Class Name	Edit	Delete
1	Six	Edit	Delete
2	Seven	Edit	Delete
3	Eight	Edit	Delete

Dashboard

CLASSES

Manage Classes

TEACHERS

Manage Teachers

MANAGE CLASS TEACHERS

Create Class Teachers

STUDENTS

Manage Students

Create Class Teachers

Home / Create Class Teachers

Create Class Teachers

Firstname *

Lastname *

Email Address *

Phone No *

Select Class *

--Select Class--

Save

All Class Teachers

Show 10 entries

Search:

#	First Name	Last Name	Email Address	Phone No	Class	Date Created	Edit	Delete
1	Mr	Teacher	class@six	01715123456	Six	2024-11-02	Edit	Delete
2	Class 7	Teacher	class@seven	01821654321	Seven	2024-11-02	Edit	Delete
3	Class 8	Teacher	class@eight	01913789012	Eight	2024-11-02	Edit	Delete
4	Mr.	XY	class@nine	01307456789	Nine	2024-11-02	Edit	Delete
5	Mr.	AB	class@ten	01307456789	Ten	2024-11-02	Edit	Delete

Showing 1 to 5 of 5 entries

Previous1Next

CLASSES

Manage Classes >

TEACHERS

Manage Teachers >

STUDENTS

Manage Students >

Create Students

Home / Create Students

Create Students

Firstname *

Lastname *

Other Name *

Admission Number *

Select Class *

--Select Class--

Save

All Students

Show

10

entries

Search:

6.3 Teacher Panel

AMS

AMS

Welcome Mr Teacher

Dashboard

STUDENTS

Manage Students >

ATTENDANCE

Manage Attendance >

Class Teacher Dashboard (Six)

Home / Dashboard

STUDENTS

10

CLASSES

1

TOTAL STUDENT ATTENDANCE

20

© 2024

AMS

AMS

Welcome Mr Teacher

Dashboard

STUDENTS

Manage Students >

ATTENDANCE

Manage Attendance >

All Student in (Six) Class

Home / All Student in Class

All Student In Class

Show

10

entries

Search:

#	First Name	Last Name	Other Name	Admission No	Class
1	Farhana	Islam	Sultana	20240001	Six
2	Arafat	Rahman	Kabir	20240002	Six
3	Ruhul	Kuddus	Sami	20240003	Six
4	Mithun	Sarker	Raihan	20240004	Six
5	Puja	Das	Aditi	20240005	Six

AMS

Welcome Mr Teacher

Dashboard

STUDENTS

Manage Students

ATTENDANCE

Manage Attendance

Take Attendance (Today's Date : 12-11-2024)

Home / All Student in Class

All Student in (Six) Class

Note: Click on the checkboxes besides each student to take attendance!

#	First Name	Last Name	Other Name	Admission No	Class	Check
1	Farhana	Islam	Sultana	20240001	Six	<input type="checkbox"/>
2	Arafat	Rahman	Kabir	20240002	Six	<input type="checkbox"/>
3	Ruhul	Kuddus	Sami	20240003	Six	<input type="checkbox"/>
4	Mithun	Sarker	Raihan	20240004	Six	<input type="checkbox"/>
5	Puja	Das	Aditi	20240005	Six	<input type="checkbox"/>

Manage Students

ATTENDANCE

Manage Attendance

View Class Attendance

Select Date *

dd/mm/yyyy

View Attendance

Class Attendance

Show

10

Search:

entries

#	First Name	Last Name	Other Name	Admission No	Class	Status	Date
1	Farhana	Islam	Sultana	20240001	Six	Present	2024-12-11
2	Arafat	Rahman	Kabir	20240002	Six	Present	2024-12-11
3	Ruhul	Kuddus	Sami	20240003	Six	Present	2024-12-11

Dashboard

STUDENTS

Manage Students

ATTENDANCE

Manage Attendance

View Student Attendance

Home / View Student Attendance

Search for a Student

Admission Number

Student Name

Enter Admission Number

Enter Student Name

Search

Attendance Records

#	First Name	Last Name	Other Name	Admission No	Class	Status	Date
1	Farhana	Islam	Sultana	20240001	Six	Present	2024-12-11
2	Farhana	Islam	Sultana	20240001	Six	Present	2024-12-10

6.4 Student Panel

Page 15

The screenshot displays the School Attendance Management System (SAS) interface. The top navigation bar includes the AMS logo, a menu icon, a search bar, and a user profile for Mansoor Rahman. The left sidebar shows the 'Dashboard' and 'ATTENDANCE' sections, with 'Manage Attendance' selected.

The main content area is titled 'My Attendance' and includes a 'View Attendance' section with a date selector (mm/dd/yyyy) and a 'View Attendance' button. Below this is the 'Attendance Records' section, which shows a table of attendance data for a specific date (2024-11-08).

The table has the following columns: #, First Name, Last Name, Other Name, Admission No, Class, Status, and Date. The data row shows a student named Mansoor Rahman with admission number 20243001, in class 9, with a status of 'Present'.

Below the table, there is a summary row showing 'Showing 1 to 1 of 1 entries' and navigation buttons for 'Previous', '1', and 'Next'.

The bottom part of the image shows an Excel spreadsheet titled 'Student_Attendance_All_Records-report (3) - Excel'. The spreadsheet contains the same attendance data as the table in the SAS interface, with columns for #, First Name, Last Name, Other Name, Admission No, Class, Status, and Date. The data row shows a student named Mansoor Rahman with admission number 20243001, in class 9, with a status of 'Present'.

7. Conclusion and Further Work

7.1 Conclusion

This project demonstrates how distributed database systems can optimize school attendance management by providing scalability, efficiency, and high performance. The design of role-based user interfaces ensures ease of use for administrators, teachers, and students.

7.2 Future Plan

Future enhancements may include:

- Mobile application integration.
- Enhanced reporting features like data visualization.
- AI-based attendance prediction and anomaly detection.