SCHOOL MANAGEMENT SYSTEM

By

Mamadou W Barry 210032409

Ebra Ceesay 210032408

Isoimi-Dini Ali 210032406

Supervisor

Lutfun Nahar Lota

Asst. Professor CSE

Department of Technical and Vocational Education (TVE)

Islamic University of Technology (IUT)

A Project Report Submitted to the Department of CSE

In Partial Fulfillment of the Requirements for the Award of

Bachelor of Science in Technical Education

Specialized in Computer Science and Engineering

(BSCTE-CSE)

DECLARATION OF AUTHORSHIP

This is to certify that the work presented in this report is the outcome of the analysis, research, design, and development carried out by Mamadou W Barry 210032409, Ebra Ceesay 210032408 and Isomi-Dini Ali 210032406 under the supervision of Asst. Professor, Lutfun Nahar Lota Department of Computer Science and Engineering, Islamic University of Technology (IUT) Dhaka, Bangladesh. It is also declared that neither of this report nor any part of this report has been submitted elsewhere for the award of any degree or diploma.

Mamadou W Barry

Student No: **210032409**

Ebra Ceesay

Student No: **210032408**

Isoimi-Dini Ali

Student No: **210032406**

Supervisor
Lutfun Nahar Lota, Asst. Professor
Department of Computer Science and Engineering
Islamic University of Technology

ACKNOWLEDGMENT

We would like to express our sincere gratitude to those who have been instrumental in the completion of our report.

First and foremost, we are deeply indebted to our supervisor, Assistant Professor. Lutfun Nahar Lota her guidance, support, and insightful feedback throughout the past two semesters have been invaluable. We are particularly grateful for her patience and encouragement as we navigated the challenges of our project.

Finally, we want to thank our families and friends for their unwavering support and understanding throughout this journey. Their encouragement and patience helped us persevere through the challenges of these projects.

This thesis would not have been possible without the contributions of these individuals. We are truly grateful for their support and guidance.

ABSTRACT

The School Management System (SMS) assists headmasters in obtaining the most accurate information for effective decision-making. It provides teachers and headmasters with time-saving administrative tools, parents with immediate access to their children's grades, and students with the ability to track their own progress. The SMS's robust features allow for the generation of schedules and reports within minutes and enable quick retrieval of attendance records, grade checks, student ID and communication among administration and students.

The School Management System supports teachers by streamlining the completion of grade entry, tracking student attendance, sharing class notes, and detailed grade sheet, and facilitating communication with staff, students, and parents via messaging. For students, it offers online access to school resources and personal information, as well as the ability to view progressive records. Additionally, students can communicate with teachers and peers through chat communication.

The School Management System is a web-enabled application developed in Laraval PHP with a powerful MySQL database and CSS and HTML backend. Implementing enquires only an internet connection and desktops, eliminating the need for expensive hardware and software. The system functions as a centralized database and application, allowing schools to access it from anywhere using login credentials. Since it is platform-independent, almost any user can access it from any system that can connect to the internet. Furthermore, the system can be customized to meet the specific needs of individual schools.

TABLE OF CONTENT

LIST OF FIGURES

LIST OF ABBREVIATIONS

ABBREVIATIONS	DESCRIPTION
CSS	Cascading Style Sheets
HTML	Hyper Text Markup Language
PHP	PHP: Hypertext Preprocessor
SQL	Structured Query Language
XAMP	Cross-Platform (X), Apache (A), MySQL (M), PHP (P), and Perl
SMS	School Management System

CHAPTER 1 INTRODUCTION

1.1 Introduction

The role of education in national development is paramount, and modern education systems are continually striving to enhance quality. A crucial facet of this improvement lies in the effective management of school resources. Introducing our School Management System, a pivotal tool facilitating continuous communication among headmasters, teachers, parents, and students to achieve the overarching goal of elevated education standards.

The system, manifested through a comprehensive website, serves as a central hub addressing the diverse needs of all users simultaneously. For students, the platform offers the ability to access subject grades, communicate with the headmaster and teachers regarding concerns, recommendations, or absence permissions, and stay informed about school news and posts shared by other users.

Headmasters implement complete control over the system, enabling them to add new parents, teachers, and students along with their respective subjects. Teachers, on the other hand, enjoy the capability to input and edit student grades for their designated subjects, fostering direct connections with students and their parents.

Parents benefit from a dedicated portal that provides access to their children's grades without any editing privileges. They can also directly communicate with teachers and headmasters. All users, regardless of their role, can contribute to the educational process by publishing updates in the designated section, fostering a collaborative and transparent environment visible to the entire school community. This School Management System stands as a pivotal tool in harmonizing the education process and promoting efficient communication and collaboration among all stakeholders.

1.2 Objectives with specific aims

➢ Develop a responsive website for efficient management of various school activities.

➢ Implement a system to facilitate convenient and swift transactions between students and staff.

➢ Create a comprehensive system for recording student data, including grades and other relevant information.

➢ Design a holistic system to assist school administrators in managing all aspects of school operations.

➢ Prioritize security and authorization to restrict access to academically registered students' records.

➢ Enable online student registration for a streamlined enrollment process.

➢ Implement a reporting system capable of generating various types of reports, providing insights into academic performance, attendance and students ID.

➢ Enable real-time messaging and discussion forums for administration, Teachers and students.

1.3 Scope and Limitation of the Project

The School Management System project is a visionary endeavor, aiming to modernize educational administration through the development of a responsive website. The core feature ensures a user-friendly interface accessible across devices, optimizing school operations through automation and streamlining diverse activities on a centralized platform. Effective communication between students and staff is prioritized, enhancing transactional processes. The system records and manages student data, grades, and academic information, contributing to a robust academic tracking and performance evaluation system. Basically the project extends to cover enrollment processes, resource management, and provides administrators with a comprehensive decision-making tool. Security and authorization ensure exclusive access to students' records, with online registration enhancing convenience.

However, the project faces challenges such as potential technical complexities, implementation issues, and the necessity for user training. Its effectiveness hinges on the reliability of the technological infrastructure. The emphasis on data privacy and security introduces challenges in compliance with evolving regulations, requiring a delicate balance with accessibility. Success depends on user adoption and acceptance, necessitating effective change management strategies.

CHAPTER 2   LITERATURE REVIEW

Literature delves into the fundamental concepts of a School Management System (SMS), exploring its implications for teachers, students, and parents. As educational institutions navigate the complexities of data management, the review aims to uncover key insights from existing literature.

School Management System Strategy

The School Management System emerges as a crucial solution, addressing the escalating need for efficient data management in contemporary schools. In the absence of a robust internal infrastructure facilitating seamless data sharing, schools risk losing essential information. To meet these challenges, a comprehensive SMS becomes imperative, streamlining various functions, connecting different facets of school operations, using web communication, and simplifying day-to-day tasks. By automating scheduling and optimizing resource allocation, the SMS empowers authorities to create efficient student's classes, allowing staff to concentrate more on student-centric activities. This literature review establishes the School Management System as an essential tool for enhancing operational efficiency, communication, and overall effectiveness in modern educational institutions.

2.1 Administration Management

- The SMS offers a unified software platform for seamless school management.
- Its multi-campus management feature ensures scalability and adaptability to diverse educational environments.
- With a user-friendly web front-end, the SMS enhances communication channels between the school, parents, and stakeholders.
- Admin keep record management to streamlined, minimizing redundancy and optimizing resource utilization.
- Automation of operational functions, library, student ID, communication chat and attendance management, increases overall efficiency.

2.2 Teacher Management

- Teachers benefit from a robust system for comprehensive attendance, marks and grade management.

- The platform allows teachers to upload education material, promoting knowledge sharing within the school.

- Access to student's reports enhances data-driven decision-making.

- An internal messaging system facilitates seamless communication, while forum participation encourages collaborative learning.

- Teachers can update student attendance records in real time, which can then be accessed by administrators.

2.3 Student Management

- ➢ The SMS provides students with real-time exposure for enhanced learning experiences.

- ➢ Students can actively contribute to knowledge sharing through forum participation.

- ➢ Access to online marks and library fosters a transparent and organized learning environment.

- ➢ Interaction opportunities with admin, peers and teachers create a well-connected educational community.

- ➢ students can modify their personal information, such as contact details, address and other information in their enrollment status.

2.4 Parent Management

- ➢ Parents will have access to system portal where they can view information related to their child's education fosters greater parental involvement and engagement.

- ➢ The platform encourages knowledge sharing and interaction with other parents and the school community through chats and forums.

- ➢ It establishes an easy and effective communication with the school administration to facilitating parental involvement in the school management.

- ➢ Access to a child's attendance, marks, fees, and more provides parents with a comprehensive overview of their child's educational journey.

- ➢ Access to a school notice with important dates such as exams, parent-teacher meetings, and school events helps parents plan accordingly and stay engaged with school activities.

2.5 Technologies used in School Management System

- ➢ **HTML:** Standard markup language for web pages, enabling structured content creation, including text, images, and interactive forms.

- ➢ **CSS:** Defines how HTML elements are displayed on various media and allows for styling web pages.

- ➢ **PHP:** Open-source server-side scripting language for creating dynamic web pages, often used in conjunction with MySQL databases.

- ➢ **JAVASCRIPT**: A versatile programming language allows you to add interactive, animation and dynamic content to websites.

- ➢ **LARAVEL**: An open source PHP framework used for web provides a set of tools and libraries to streamline the development process.

- ➢ **MySQL Database:** The most popular open-source database, known for its performance and reliability, used by high-profile web properties**.**

➢ **PowerAMC**: PowerAMC is a data modeling tool developed by SAP, facilitating the design of databases and business processes through a user-friendly interface that supports various database management systems.

➢ **XAMPP**: XAMPP is a cross-platform web server solution that includes Apache, MySQL, PHP, and Perl, simplifying the setup of a local server environment for web development.

➢ **Bootstrap:** Bootstrap, an open-source CSS framework developed by Twitter, provides pre-designed components and a responsive grid system, streamlining UI development for web designers.

CHAPTER 3 REQUIREMENT ANALYSIS

3.1 Project Description

The School Management System project is precisely designed to offer a user-friendly and efficient platform for diverse tasks within an educational institution. It comprises key modules that collectively contribute to streamlined operations and enhanced management capabilities.

User Management:

This module serves as the foundation, ensuring secure and organized access for various stakeholders, including administrators, teachers, students, and parents. It establishes roles and permissions, contributing to a controlled and secure environment.

Student Management:

The Student Management component focuses on centralizing student-related information. It covers aspects such as enrollment, attendance tracking, academic performance monitoring, and communication with parents, fostering a comprehensive approach to student administration.

Employee Management:

This module addresses the details of managing staff within the school management system. From teacher assignments to administrative roles, it streamlines employee data, facilitating efficient human resource management.

Profile Management:

Profile Management ensures that individual users, whether students, teachers, or administrators, have personalized and up-to-date profiles. This feature enhances user experience and contributes to a more tailored and effective interaction with the system.

Report Management:

The Report Management module consolidates and generates various reports, detail individual includes students' academic performance reports progress over various terms, and attendance, providing insightful data on student trends. It aids in data-driven decision-making for administrators and teachers.

3.2 Key Features for Admin

The administrative capabilities within the School Management System provide a robust set of features for efficient system governance:

User Management

Administrators maintain the authority to create, modify, or delete user accounts, ensuring a secure and organized access system. This feature empowers administrators to regulate user activity, enhancing overall system security.

System Configuration

Admins enjoy full control over system settings, enabling them to tailor the platform to the unique needs of the school. This customization enhances the system's adaptability and functionality, promoting an environment aligned with specific educational requirements.

Data Management

Administrators oversee critical data management tasks, including backups, data import/export, and archival processes. This ensures the systematic organization and protection of data, contributing to a seamless and reliable data mechanism.

Report Generation

Admins can generate insightful reports on system usage, user activity, and system performance. These reports serve as valuable tools for administrators, providing data-driven insights that aid in decision-making and continual system improvement, example student ID, attendance, mark sheet and registration.

Library Management

Administrators can maintain a detailed catalog of online library materials, including e-books and journals and multimedia resources. This includes the ability to add, update, and delete catalog entries.

3.3 Key Features for Teacher

The Teacher module in the School Management System is a comprehensive tool that empowers educators with key features for effective classroom management:

Grade Entry

Teachers can effortlessly input and manage student grades, ensuring precise and up-to-date academic records. This feature streamlines the grading process, fostering accuracy in assessing student performance.

Communication

Facilitating seamless communication, teachers engage with students, parents, and administrators. This promotes a collaborative educational environment, where feedback and information exchange contribute to student success.

Attendance Tracking

The system enables teachers to efficiently take and record student attendance, providing a reliable mechanism for monitoring class and enhancing overall class management.

Resource Sharing

Teachers can easily upload and share essential course materials, e-books and announcements, fostering an organized and accessible learning experience for students.

Assessment

The module empowers teachers to create and administer various assessments, including quizzes, tests, assignments, and announcements. This feature enhances the overall assessment process, contributing to a well-rounded educational experience.

3.4 Key Features for Parent

The Parent module in the School Management System introduces features that enhance parental involvement and support:

Student Monitoring

Parents will gain a comprehensive view of their child's academic journey, monitoring grades and attendance. This feature fosters a transparent and informed understanding of their child's progress.

Communication

Facilitating direct communication with teachers and administrators, parents can receive updates on their child's performance and address any concerns promptly. This promotes a collaborative partnership between parents and school administrations.

Attendance Notifications

Parents receive timely notifications regarding their child's attendance and school events. This feature ensures parents stay informed about their child's daily activities and important school-related occurrences.

Access to Announcements

Keeping parents informed, this feature provides access to school announcements, events, and important dates. It enables parents to stay actively engaged in their child's educational journey by staying informed about relevant school activities.

3.5 Key Features for Student

The Student module in the School Management System provides students with useful features:

Academic Monitoring

Students can easily check their grades, attendance, and academic records, keeping them informed about their progress.

Communication

Students can communicate directly with teachers, parents, and administrators for questions, feedback, or concerns, fostering better collaboration. This enhances collaboration and ensures students can seek help or clarification when needed.

Course Registration

The system simplifies course registration, allowing students to view schedules, register for courses, and access necessary materials effortlessly.

Personal Profile

Students can update their personal information, ensuring that contact details, enabling them to update contact details seamlessly. This feature ensures accurate and up-to-date records within the system.

Resources Access

Access to digital resources, including e-books, online journals, and other learning materials. This supports diverse learning styles and helps students in their studies.

CHAPTER 4   DESIGN AND IMPLEMENTATION

Introduction

This chapter describes the system's design and implementation stages. It shows the database schema for the system, the ER diagram, and the Use case diagram.

Additionally, requirements and outputs from the design phase are combined in the implementation phase, and the relevant technologies are used to process them.

4.1 Design diagrams discussion

4.1.1 ER diagram

The ER Diagram for a School Management System illustrates a dynamic interaction between Admin, Teacher, Student, and Parent. Basically it ensures a clear illustration of roles, fostering an organized and interactive educational environment where each actor plays a crucial part in the system's functionality and effectiveness. It helps visualize how data about admin, students, parents and teachers, subjects, and other relevant aspects are organized and connected.
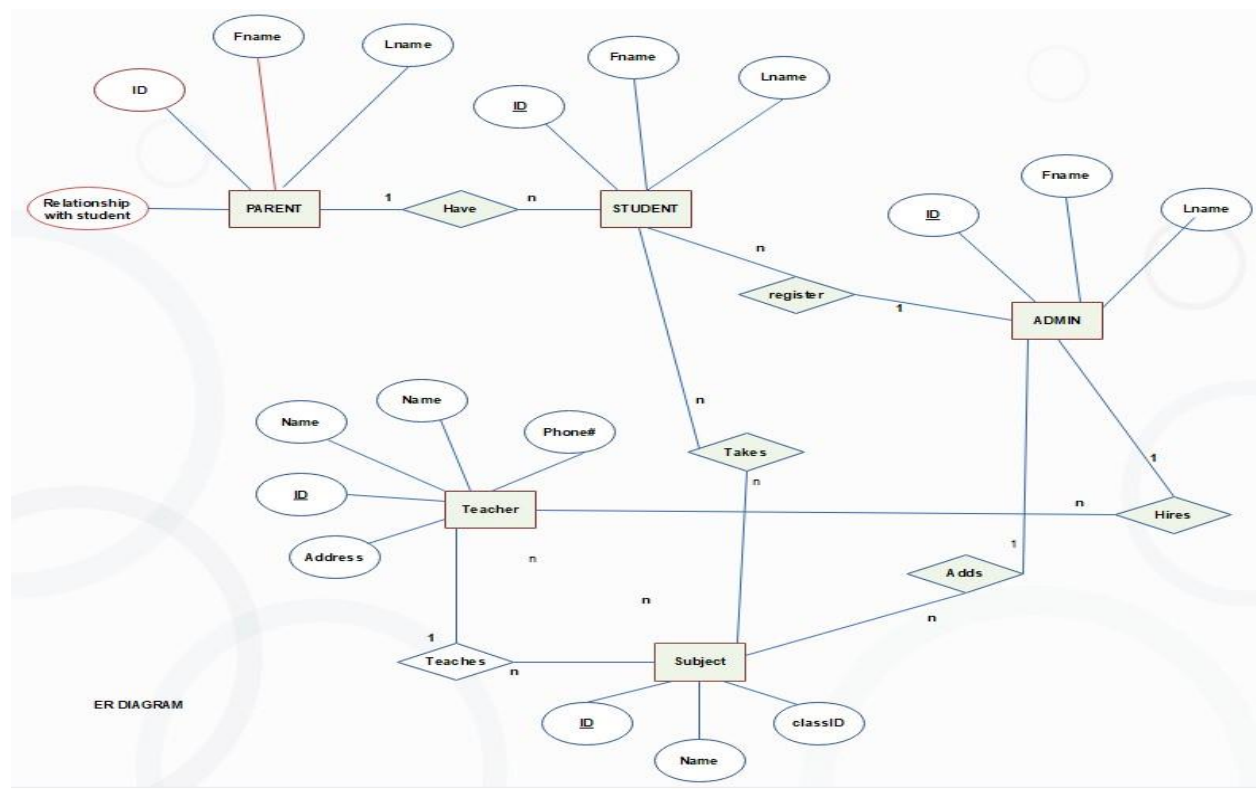
Figure 1 ER Diagram

4.1.2 Admin use case diagram

The admin use case diagram outlines the various tasks an administrator performs, including login, user management, and student report viewing. It provides a comprehensive overview of the admin's responsibilities, including user, subject, and academic year management, and report generation. This clear and logical workflow helps understand task interconnections, enhancing the School Management System's efficiency and usability
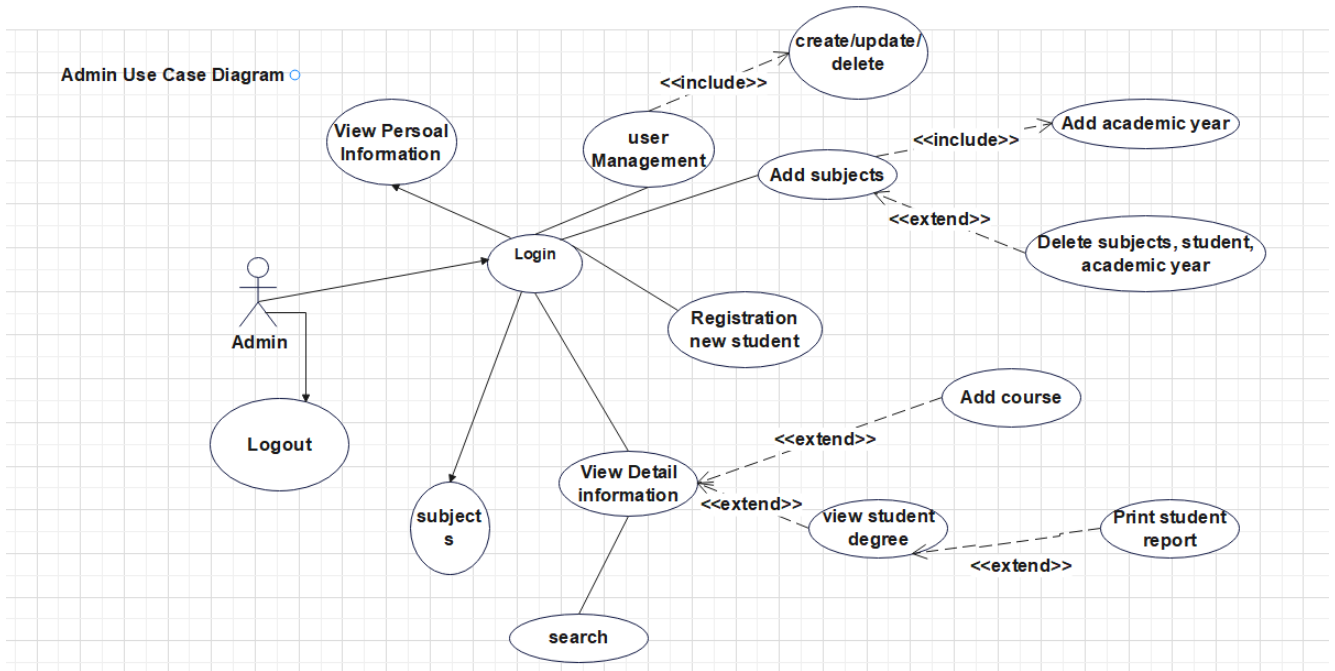
Figure 2 Admin Use Case Diagram

4.1.3 Students use case diagram

The student use case diagram illustrates essential functionalities for the student portal, including login, personal information access, course browsing, registration, and grade viewing. It aims to empower students with user-friendly tools for efficient access to information. It reflects a commitment to enhancing the student experience, supporting their educational journey, and facilitating effective interaction with the school management system.
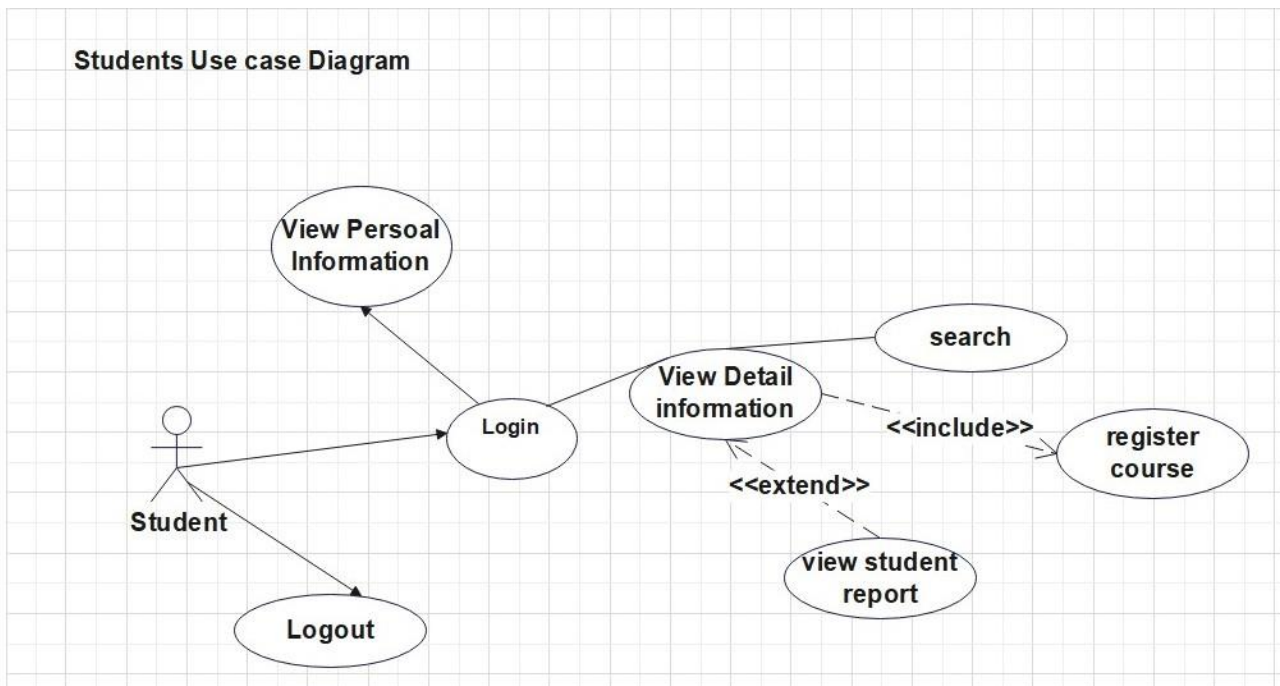
Figure 3 Student Use Case Diagram

4.1.4 Teacher use case diagram

The teacher-use case diagram outlines vital functionalities, empowering educators within the system. Teachers efficiently log in, access personal details, and search for information. They oversee student data and reports, enabling effective monitoring of progress. The diagram underscores that teachers can leverage the system's capabilities to create conducive learning environments for the teaching and learning process.
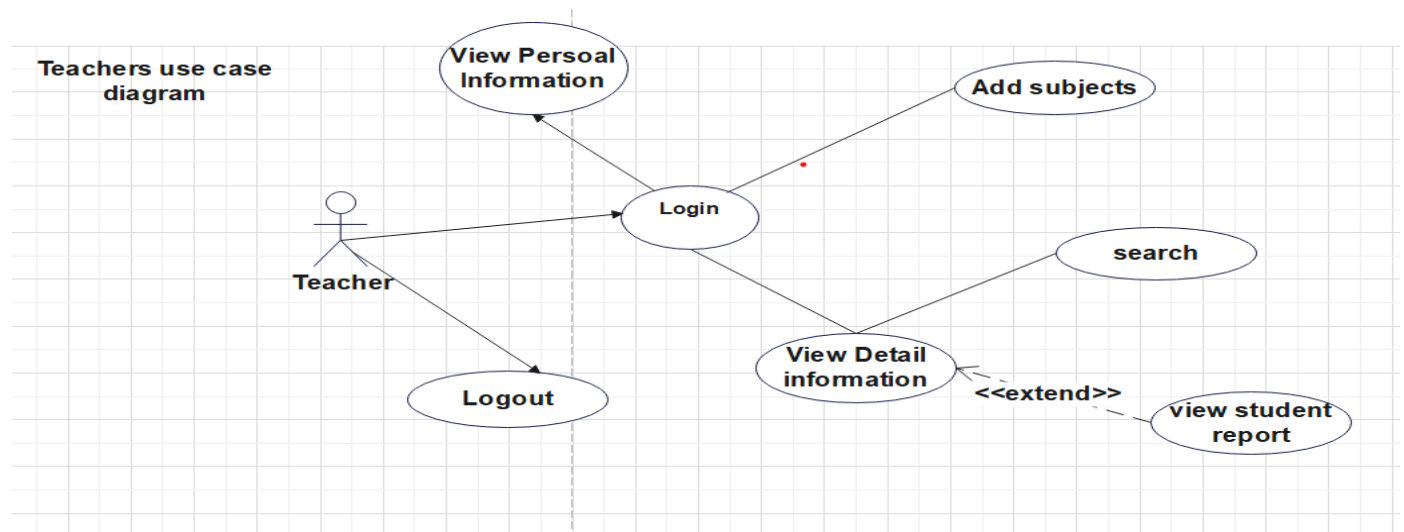
Figure 4 Teacher Use Case Diagram

4.2 Implementation Details

A planned approach was used in the implementation, utilizing a variety of technologies to develop the database and website. The procedure started with the PowerAMC was used throughout the database's implementation and design to ensure that it had a thorough and orderly structure for the School Management System. EdrawMax was essential in the implementation phase by creation of essential visual components, including Entity-Relationship (ER) and Use Case diagrams. HTML structural basis, which established the basic site layout. After that, CSS was used to create a visually beautiful and responsive design. JavaScript was included for improved interactivity, resulting in dynamic user interfaces. SQL was essential to effectively administering the databases. Strong elements of Laravel, a PHP web application framework for back-end functionality, were also incorporated throughout the implementation process. As the local server, XAMPP made it easier to test and implement the system.

4.2.1 Login interface
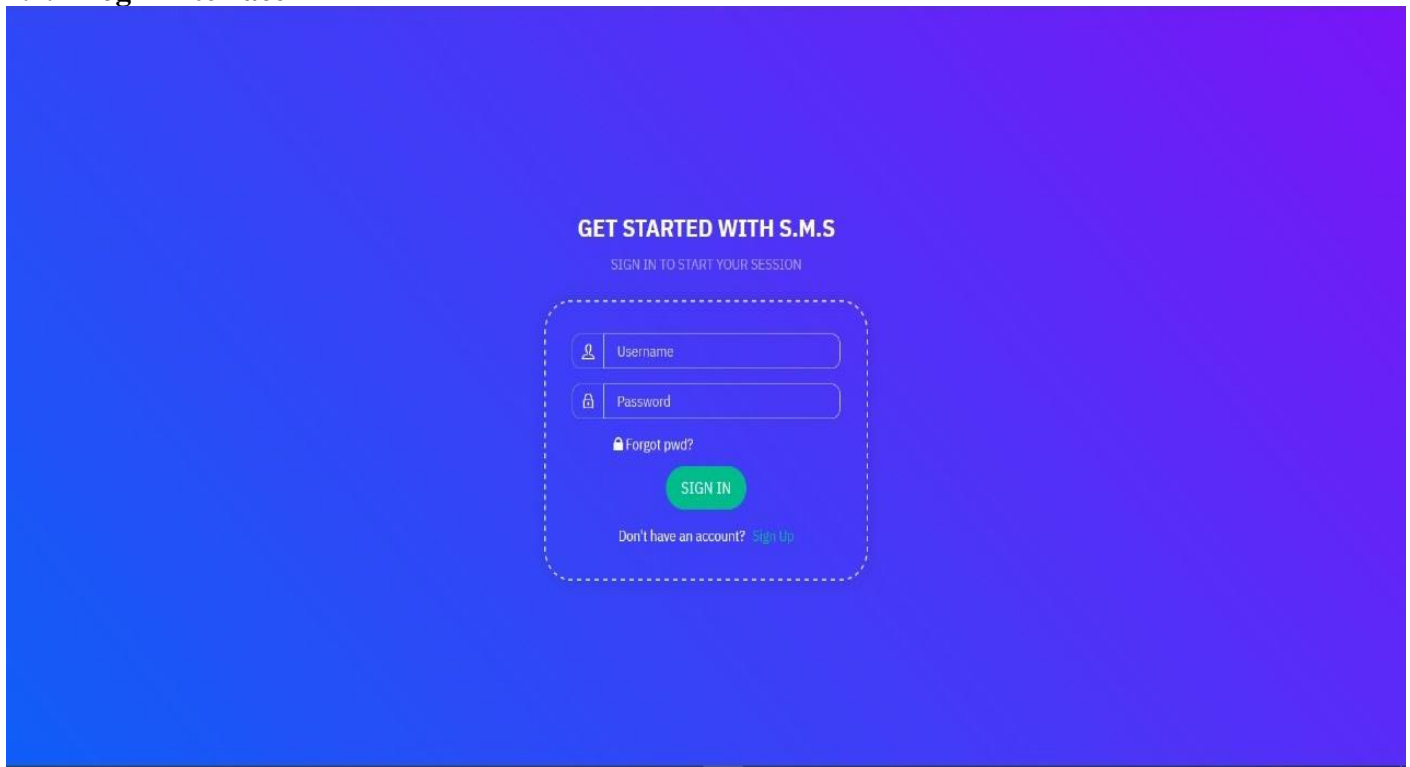
Figure 5 Login interface

4.2.2 Admin Interface

Figure 6 Admin interface

4.2.3 Teacher Interface

Figure 7 Teacher interface
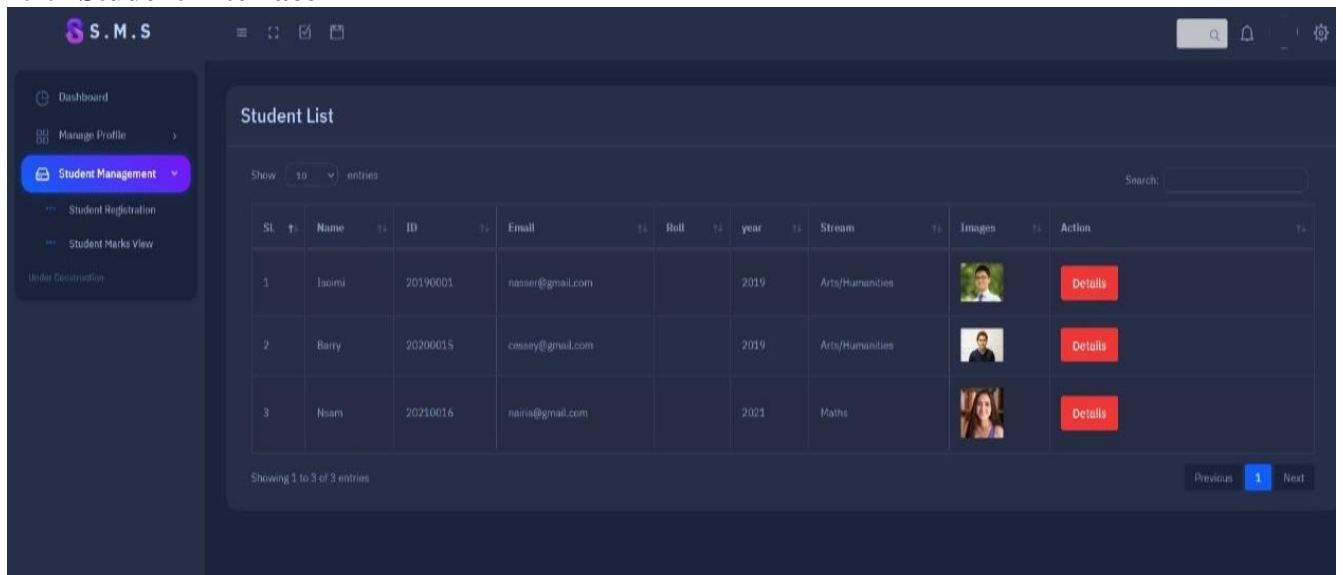
4.2.4 Student Interface

Figure 8 Student interface

4.2.5 Grade Mark Sheet Interface
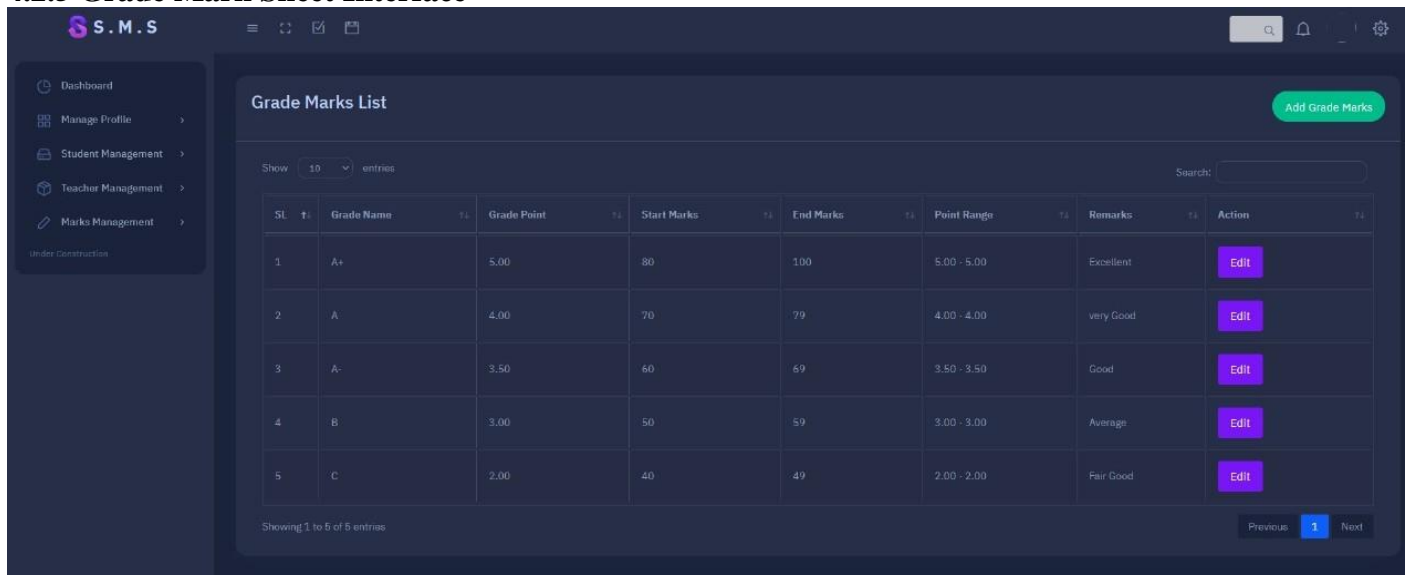

Figure 9 Mark sheet interface
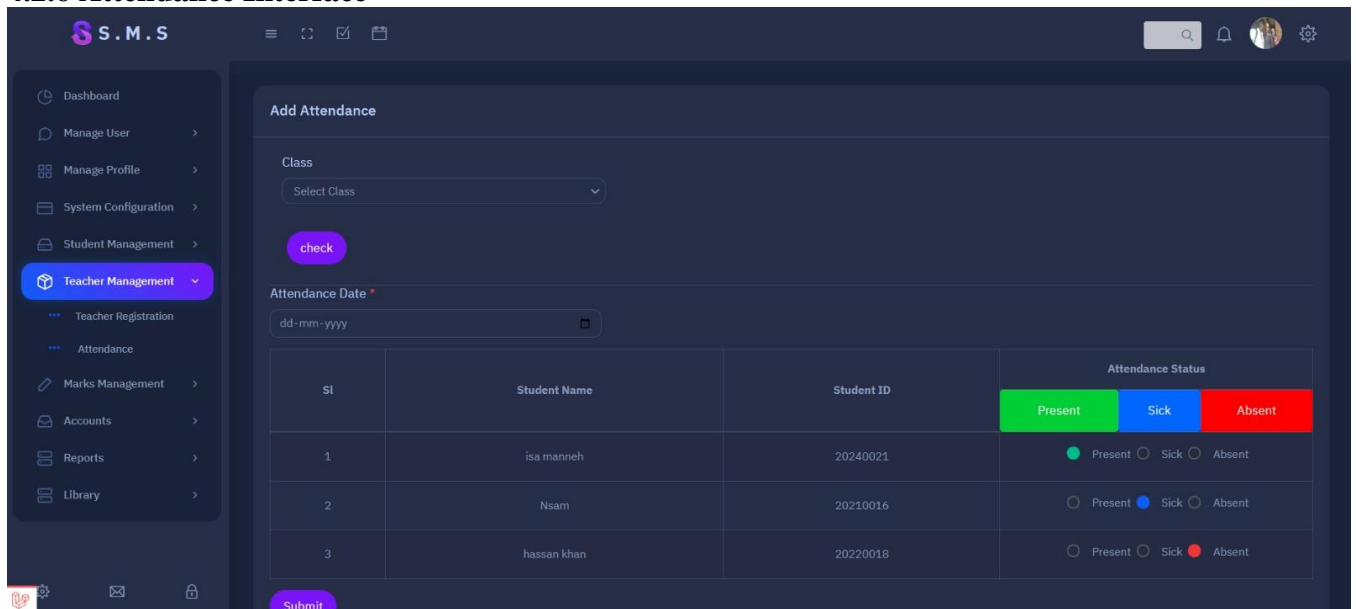
4.2.6 Attendance Interface

Figure 10 Attendance interface
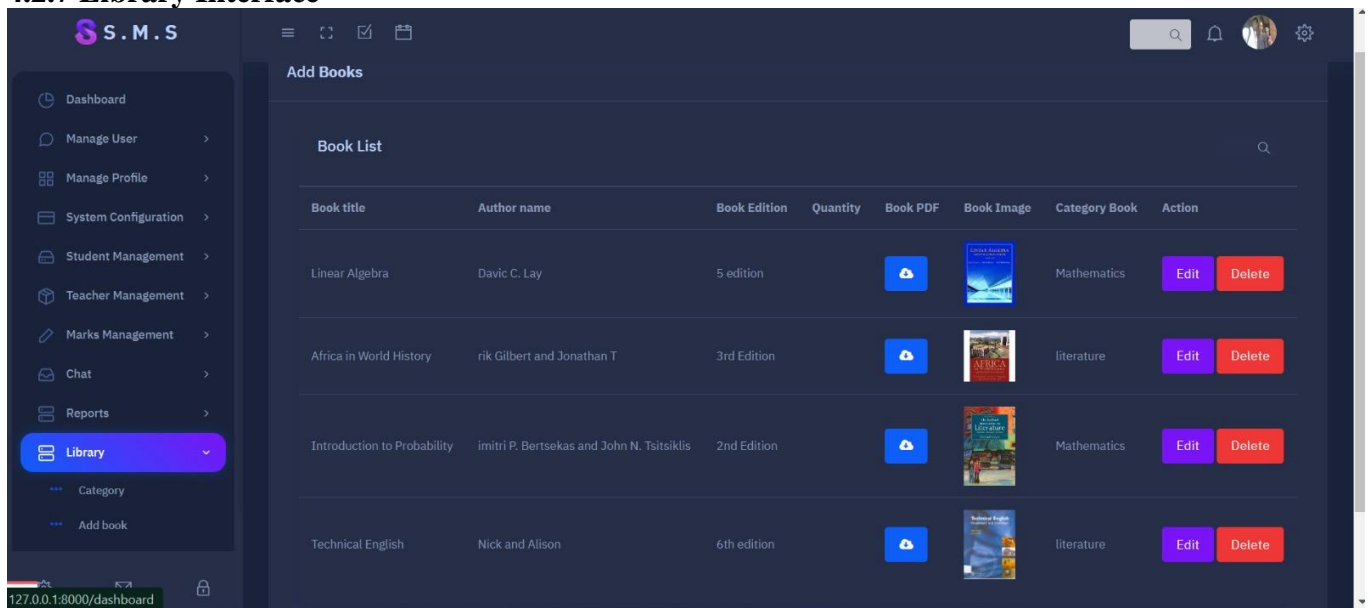
4.2.7 Library Interface

Figure 11 Library interface

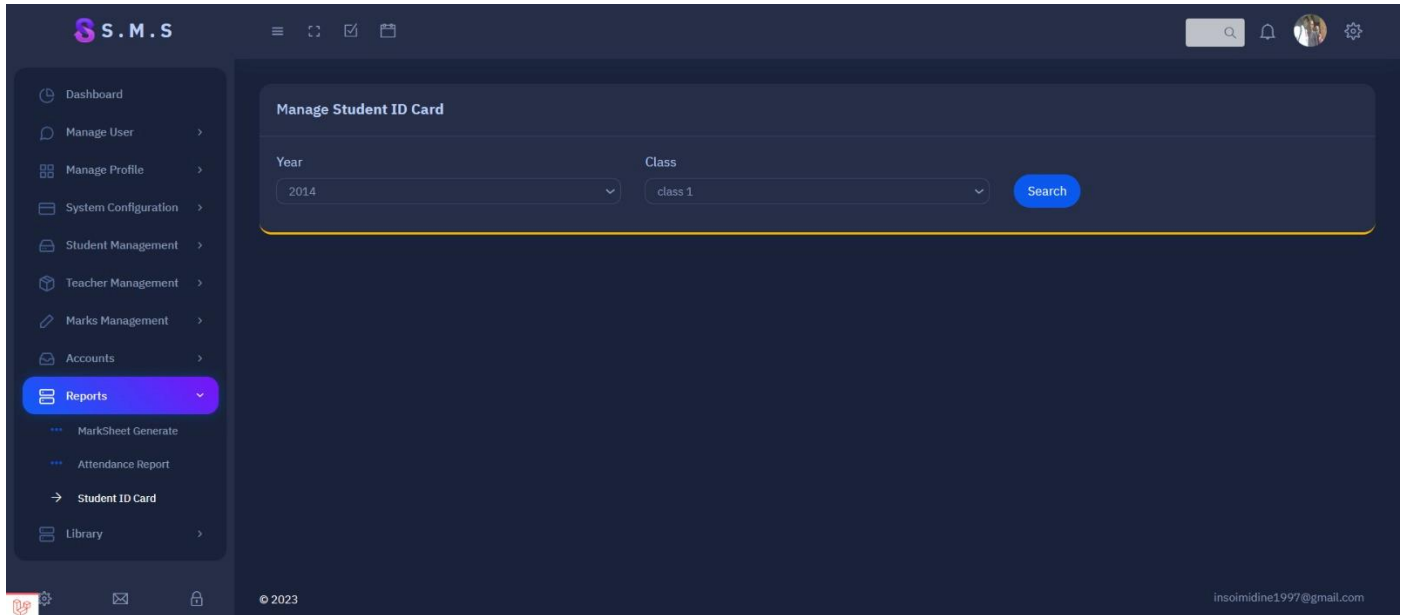## 4.2.8 Student ID Generate Interface

Figure 12 Student ID Generate interface

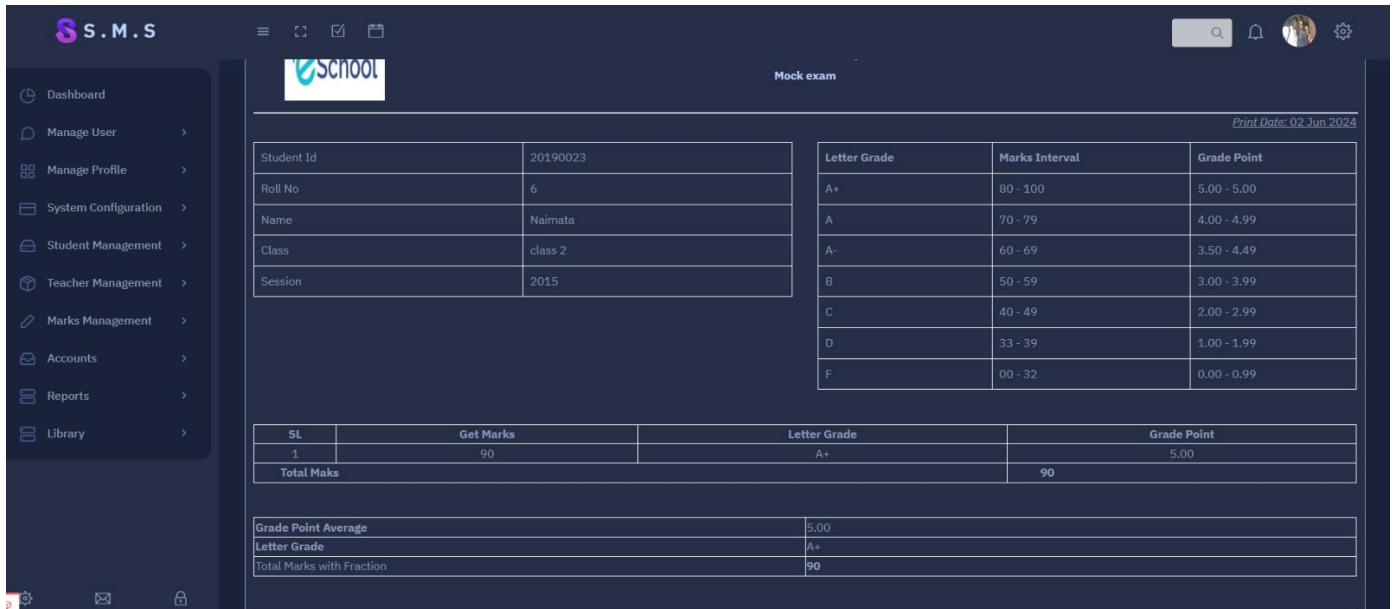## 4.2.9 Students Grade sheet Interface

Figure 13 Student grade sheet interface
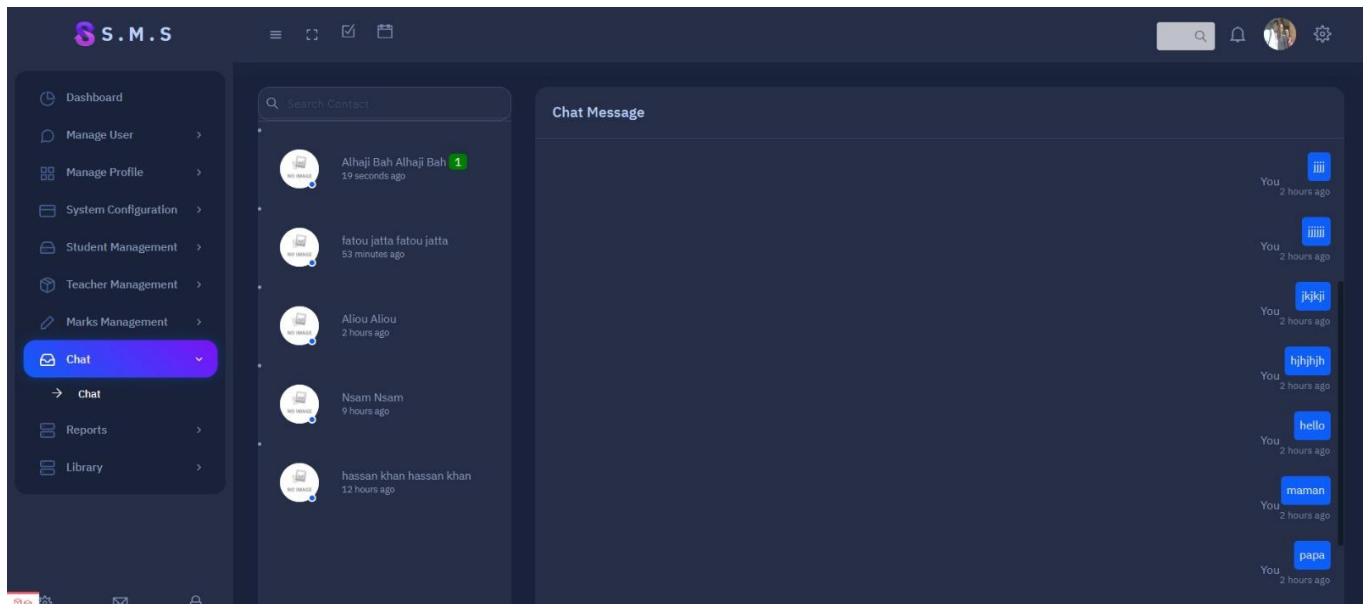
4.2.10 Communication and Chat Interface

Figure 14 Communication and chat interface

CHAPTER 5 CONCLUSION AND FUTURE WORK

5.1 Conclusion

In conclusion, the School Management System (SMS) project is a forward-thinking approach that has the potential to completely transform both academic and administrative procedures. Its strategy plan is to do away with laborious paperwork and bring in the digital age for increased productivity. The SMS project seeks to provide a user-friendly platform that simplifies many academic and administrative duties by address the challenges posed manual system. The project's goal is to enable smooth operations in educational institutions by utilizing automation to streamline administrative procedures in the future.

5.2 Future work

Future iterations of the school management system will streamline and enrich the educational experience through several key enhancements. Advanced timetable and scheduling features will enable efficient and flexible class management. The integration of virtual classrooms enables facilitate remote learning and collaboration. Feedback and survey tools will be introduced to collect and analyze input from students, teachers, and parents, fostering continuous improvement. Additionally, the system will support secure online examinations, allowing remote assessments. These enhancements will create a dynamic, responsive, and accessible educational system.

5.3 References

1. Blum, R. (2018). *PHP, MySQL, & JavaScript all-in-one for dummies*. John Wiley & Sons, Inc.
2. Lockhart, J. (2015). *Modern PHP: New features and good practices* (First edition). O'Reilly Media.
3. Monteiro, F. (2018). *Hands-On full stack web development with angular 6 and laravel: Become fluent in both frontend and backend web development with docker, angular and laravel*. Packt.
4. Moore, D. M. (2013). *Instant Slic3r: Unravel the mysteries behind taking a virtual model and turning it into a physical object*. Packt Publishing.
5. Welling, L., & Thomson, L. (2003). *PHP and MySQL Web development* (2nd ed). Sams.