



Tribhuvan University
Faculty of Humanities and Social Sciences

SMART SCHOOL

A PROJECT REPORT

Submitted to
Department of Computer Application
Aims International College

In partial fulfillment of the requirements for the Bachelors in Computer Application

Submitted by
Ashish Chhetri Biswas (7-2-710-210-2015)
Gautam Kumar Shrestha (6-2-757-7-2021)

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Under the supervision of
Shambhu Charan Shrestha



Tribhuvan University
Faculty of Humanities and Social Sciences
Aims International College

SUPERVISOR'S RECOMMENDATION

I hereby recommend that this project prepared under my supervision by ASHISH CHHETRI BISWAS and GAUTAM KUMAR SHRESTHA entitled “**SMART SCHOOL**” in partial fulfillment of the requirements for the degree of Bachelor of Computer Application is recommended for the final evaluation.

SIGNATURE

Shambhu Charan Shrestha

SUPERVISOR

Department of BCA

Aims International College



Tribhuvan University
Faculty of Humanities and Social Sciences
Aims International College

LETTER OF APPROVAL

This is to certify that this project prepared by ASHISH CHHETRI BISWAS and GAUTAM KUMAR SHRESTHA entitled “**SMART SCHOOL**” in partial fulfillment of the requirements for the degree of Bachelor in Computer Application has been evaluated. In our opinion it is satisfactory in the scope and quality as a project for the required degree.

<hr/> Supervisor Mr. Shambhu Charan Shrestha Instructor Aims International College, Lagankhel	<hr/> HOD/Coordinator Mr. Subash S. Parajuli Program Coordinator, BCA Aims International College, Lagankhel
<hr/> Mr. Shambhu Charan Shrestha Internal Examiner	<hr/> Mr. Jagdish Bhatta External Examiner

ABSTRACT

The Student Attendance Management System is an advanced software solution designed to streamline the process of tracking and managing student attendance in educational institutions. Developed using HTML, CSS, JavaScript, PHP, and MySQL, the system offers a user-friendly interface for teachers and administrators to efficiently record and monitor student attendance. It addresses the limitations of manual attendance methods by providing an accurate, real-time alternative that saves time and minimizes errors, making attendance management more reliable and effective.

One of the standout features of the system is its ability to involve parents in their child's educational journey. Through a secure online portal, parents can monitor their child's attendance in real-time, ensuring they are informed of their child's presence or absence in school. This feature fosters better communication between the school and parents, helping to identify and address any attendance-related issues promptly. Additionally, the system generates detailed attendance reports that can be accessed by both school administrators and parents, offering valuable insights into the student's attendance patterns.

By incorporating parental monitoring, the Student Attendance Management System not only improves the accuracy and efficiency of attendance tracking but also strengthens the relationship between the school and families. This system reduces the administrative burden on educators and empowers parents with the information they need to support their child's academic success, ultimately contributing to a more collaborative and supportive educational environment.

Keywords:

Attendance Management, Register, Tracking, Administration, Communication

ACKNOWLEDGEMENT

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Ashish Chhetri Biswas

Gautam Kumar Shrestha

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LIST OF ABBREVIATIONS

AI	Artificial Intelligence
BCA	Bachelor of Computer Application
CRUD	Create Read Update and Delete
CSS	Cascading Style Sheets
DFD	Data Flow Diagram
ERD	Entity Relationship Diagram
HTML	Hyper Text Markup Language
JS	JavaScript
PDF	Portable Document Format
PHP	Hypertext Preprocessor
SQL	Structured Query Language
UI	User Interface
XAMPP	Cross-Platform (X), Apache (A), MySQL (M), PHP (P), Perl (P)

CHAPTER 1

INTRODUCTION

1.1 Introduction

Tracking student attendance at educational institutions is essential for keeping an eye on academic achievement and guaranteeing student responsibility. Conventional manual attendance monitoring techniques are frequently labor-intensive, error-prone, and wasteful. In order to overcome these difficulties, the Student Attendance Management System provides a digital solution that streamlines and automates the attendance process. The system was created with HTML, CSS, JavaScript, PHP, and MySQL. It offers instructors an easy-to-use interface for managing and recording student attendance in real-time, which minimizes administrative work and improves accuracy.

The system's capacity to include parents directly in the attendance tracking process is one of its most notable features. Parents may view their child's attendance records at any time via a secure online portal, guaranteeing openness and promoting improved family-school communication. With the help of this function, parents may monitor their child's attendance at school and take appropriate action in a timely manner. Through the incorporation of technology, the attendance management system enhances efficiency and encourages a cooperative approach to student achievement.

1.2 Problem statement

Traditional student attendance tracking methods are inefficient, error-prone, and lack effective communication channels between schools and parents. To address these issues and increase precision, effectiveness, and transparency, a digital solution is required.

- i. Traditional methods consume valuable time and are prone to errors.
- ii. Delays in record-keeping hinder timely monitoring
- iii. Limited access to attendance information reduces parental involvement.
- iv. No personal user login through the website to get daily attendance update
- v. No real time attendance report update to the parents

1.3 Objectives

The Student Attendance Management System aims to improve the efficiency and accuracy of attendance tracking in schools and colleges. Here are the main objectives of a **Smart School**:

- i. Automate student attendance tracking to reduce errors and save time.
- ii. Provide real-time updates for daily monitoring by teachers and parents.
- iii. Enhance parental involvement through a secure online portal.
- iv. Minimize administrative workload and improve data security.

1.4 Scope and Limitation

The following are the scopes of the project:

- i. Easy to Use: **Smart School** is designed to be simple and user-friendly interface making it easy for user to check daily attendance reports without any hassle.
- ii. Personal Logins: Everyone gets their own personal login id, so user can see daily attendance reports of their children.
- iii. Admin Superpowers and Content Boss: **Smart School** lets admins and authorized person can easily do add, update, delete and read the data on website.
- iv. Attendance Look-up: Parents can quickly check how often their child is attending school. It's a simple way to keep track of attendance.

The limitations of **Smart School** are as follows:

- i. It is necessary to have internet access at all times.
- ii. Web enabled device is required.
- iii. It will not send the notification of the reports to the parents automatically.

1.5 Report Organization

The report is organized as follows:

Chapter 1: Introduction of the project along with the problem statement, objectives, scope and limitation.

Chapter 2: Background study related to the project along with general descriptions of project functions and components. Literature review in order to have broader understanding of the project concepts based on research done previously and analyze similar systems for comparison with projects.

Chapter 3: System Analysis and design of the system using various charts and figures. Functional requirements using use cases and other techniques. Database schema, interface design and deployment diagram.

Chapter 4: Tools and techniques used for project implementation along with algorithms used in the project and creations of test cases to test the system as unit and as a whole.

Chapter 5: Lesson learnt from start to finishing the project, future recommendations for other projects and project conclusions.

CHAPTER 2

BACKGROUND STUDY AND LITERATURE REVIEW

2.1 Background Study

Effective monitoring of student attendance is critical for schools to keep accurate records and provide quick help. Traditional methods of attendance monitoring sometimes rely on manual procedures that are capable of mistakes and inefficiencies. Adopting digital technologies can help schools handle these difficulties while also improving overall operations.

- i.** Limited possibilities for customization for a range of educational requirements.
- ii.** Flaws in data security as a result of insufficient security.
- iii.** Timely analysis and reporting are made difficult by restricted data accessibility.
- iv.** Communication gaps create difficulty on effective collaboration.
- v.** Lack of real-time data updates for daily student attendance.

2.2 Literature Review

There is a need for thorough research on the variables influencing the successful integration of these technologies into management education as business schools look to include Web-based information and communication technologies into the teaching process more and more. One important element found in According to earlier management education studies, student acceptability is essential for the effective use of these instructional technologies. [2]

Jun Lio, “Attendance Management System using a Mobile Device and a Web Application”, Department of Socio-informatics, Faculty of Letters Chuo University 742-1 Higashinakano, Hachioji-shi, Tokyo 192-0393, Japan, 2016. In this paper, a novel framework for the attendance management is proposed, which consists of a mobile device and a web application. They have adopted the combination of a mobile device and web services. Registration of students is passed around among participants, one by one. Users can select one from two options, registration by selfie or registration by signature. After the registration, the ID and name which have been already registered are removed from the list of participants. An application running on the mobile device is implemented as a Monaca-application. [3]

Online student attendance has become a critical area of focus within the realm of education, particularly due to the widespread integration of digital learning platforms. Literature on this topic reveals a diverse range of perspectives and findings. Several studies emphasize the use of Learning Management Systems (LMS) as a means to track attendance, indicating that these systems facilitate easy monitoring and provide real-time data on student participation. However, concerns have been raised regarding the accuracy of this method, as some students might log in without active participation, thereby creating a potential discrepancy between presence and engagement. Additionally, research highlights the impact of diverse engagement strategies, such as interactive sessions, live discussions, and timely feedback, in influencing attendance patterns positively. Conversely, studies note challenges in ensuring equitable access to technology and the internet, leading to attendance discrepancies among socioeconomically disadvantaged students. Furthermore, the psychology of online attendance behavior is a subject of interest, with investigations into intrinsic and extrinsic motivations driving consistent participation. [4]

For the purpose of maintaining student information, the Student Information Management System (SIMS) offers a straightforward interface. Institutions of higher learning or colleges can utilize it to efficiently maintain student records. In universities as well as colleges, the development and administration of precise, current records pertaining to a student's academic journey is vitally crucial. [5]

The proposed system is a responsive, web-based attendance management solution for use across various devices, including mobile phones, tablets, and computers. It securely stores student attendance data and reduces calculation errors, using technologies like HTML, CSS, JavaScript, MySQL, and PHP. Course teachers log in to modify data, which is stored in a database. At the end of the semester, attendance is calculated, and notifications are sent to the Head of the Department (HOD), class teachers, and parents if a student's attendance is below a set threshold. The system automates attendance tracking with a user-friendly interface, ensuring secure data storage and efficient management of student, teacher, and parent/guardian information. [6]

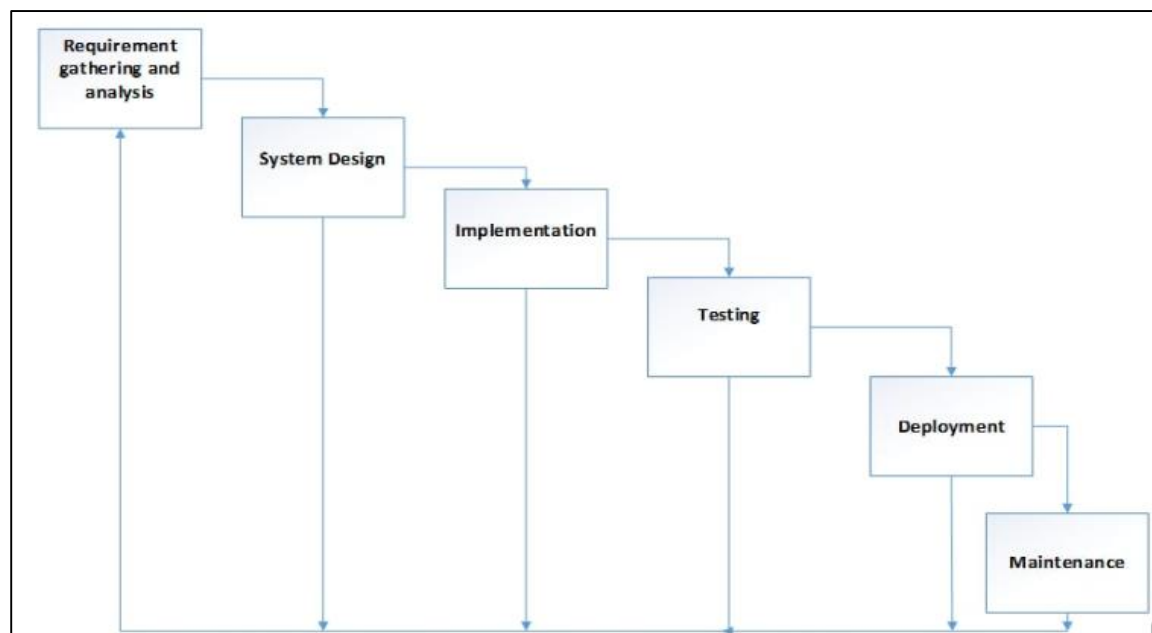
Since the literature review underscores the increasing role of web-based technologies in education, particularly for attendance management. Successful integration hinges on student acceptance and the use of tools like mobile devices, web applications, and Learning Management Systems (LMS). These technologies offer real-time monitoring and user-

friendly interfaces but face challenges in accuracy and equitable access. While innovative approaches like combining mobile devices with web applications show promise, further research is needed on engagement strategies and psychological factors influencing attendance. Effective systems must securely manage data, streamline processes, and adapt to educational needs.

2.3 Methodology

For the development of the site, **Smart School**, we have followed the approach of the Waterfall model, an SDLC model, in which the phases appear in a linear order. The waterfall model, also known as the linear sequential model, possesses a sequential flow from one phase to another. In this model, the completion of each step relies on the output of the preceding stage. This model involves various stages such as requirement definition, system and software design, implementation, testing, deployment, and maintenance.

The main advantage of this model is that it is easy to understand and possesses a clear structure and well-defined phases. As this model focuses on documentation and rigorous planning, it helps to produce a quality product with high user satisfaction. Moreover, this model helps to establish a clear milestone and goal of the project, making it easier for developers to track progress. Considering these merits, we have gone for the waterfall model as our preferred approach for website development.



(Source: Software Engineering KEC First Edition)

Figure 2.1 Waterfall Model

CHAPTER 3

SYSTEM ANALYSIS AND DESIGN

3.1 System Analysis

System Analysis refers into the process of examining a system with the intent of improving it through better procedures and methods. It is the process of planning a new system to either replace or complement an existing system. It is therefore, the process of gathering and interpreting facts, diagnosing problems and using the information to re-comment improvements in the system. System analysis is conducted with the following objectives:

- i. Evaluate the system concept for feasibility.
- ii. Perform economic and technical analysis.
- iii. Allocate functions to hardware, software people, database and other system elements.
- iv. Establish cost and schedule constraints.

3.1.1 Requirement Analysis

i. Functional Requirements

The functional requirements for our **Smart School** project layout the key features needed to make school management more efficient and user-friendly. These include secure login systems for all users, admin dashboards, tools for managing student and teacher profiles, easy class scheduling, attendance tracking, and performance monitoring. Additionally, there's a dedicated student and teacher portal, a robust communication system, and strong security measures to protect data. Together, these features help create a smooth and secure school environment for everyone involved.

- i. **User Authentication:** Login system for students, parents, teachers, and admin with secure password handling.
- ii. **Admin Dashboard:** Manage students, parents, teachers, daily attendance, user roles and permissions.
- iii. **Student Management:** Register/manage student profiles, assign to classes, class teacher and track attendance report.
- iv. **Teacher Management:** Register/manage teacher profiles, assign to student attendance report, and update student attendance.
- v. **Attendance Tracking:** Log daily attendance for students/teachers and generate attendance reports.

- vi. **Security and Privacy:** Data encryption, secure access protocols, privacy policies and data protection measures.
- vii. **Use Case Diagram**

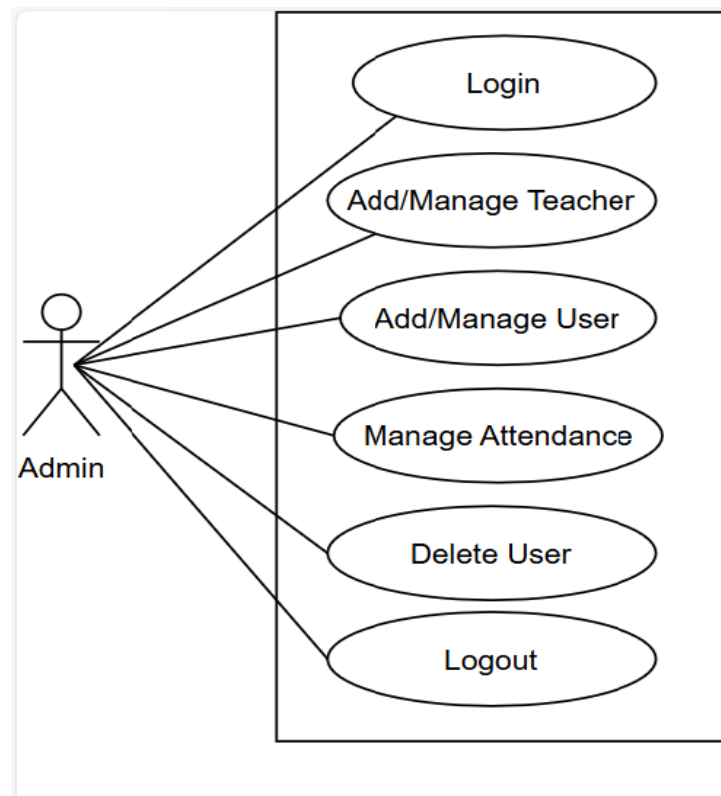


Figure 3.1 Use Case Diagram for Admin

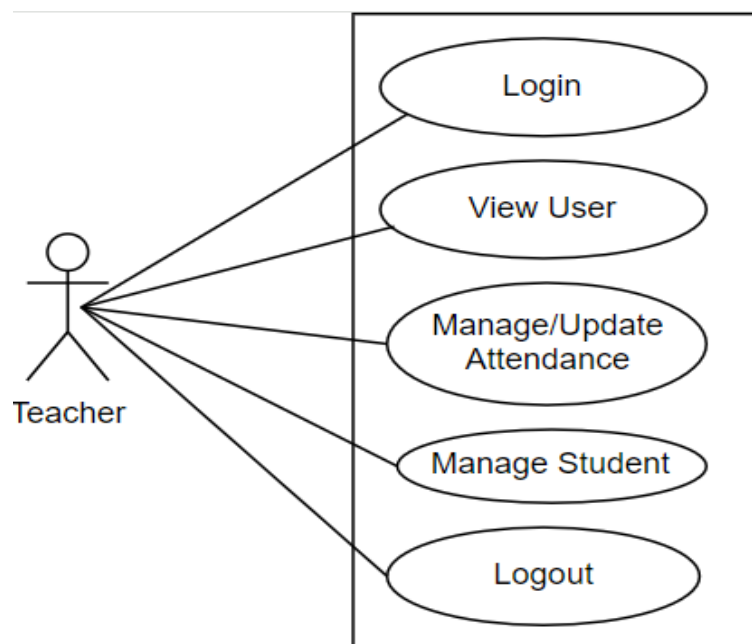


Figure 3.2 Use Case Diagram for Teacher

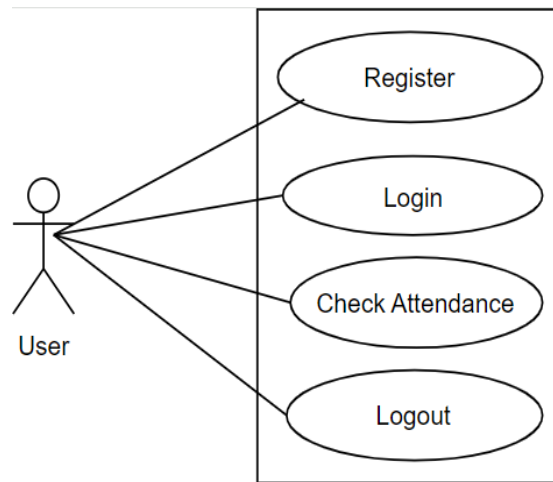


Figure 3.3 Use Case Diagram for User

ii. Non-Functional Requirement

The non-functional requirements for the **Smart School** project make sure the system is fast, safe, and easy to use. It needs to handle many users, be reliable, secure, and follow regulations. The system should be user-friendly, easy to update, work on different devices, and be accessible to everyone. The Non-Functional Requirements for our **Smart School** are as follows:

- i. Performance:** The system should be quick and respond within 2 seconds.
- ii. Reliability:** The system should work almost all the time with good backups.
- iii. Security:** The system should keep data safe with encryption and user permissions.
- iv. Usability:** The system should be easy for everyone to use.
- v. Maintainability:** The system should be easy to update and fix.
- vi. Compatibility:** The system should work on different browsers and devices.
- vii. Accessibility:** The system should be usable by people with disabilities and support different languages.

3.1.2 Feasibility Analysis

i. Technical Feasibility

The program was created using HTML, CSS, JavaScript, PHP, and MySQL, all of which are openly available. This application is theoretically viable since all of the tools necessary for project development are publicly available. The project is simply applicable given the school's current infrastructure, technology, and software.

ii. Operational Feasibility

This program had designed with simple, attractive, and user-friendly interfaces that may be simply used by the institution's entities. Because the school does not currently employ any modern technologies, the program can be quickly adopted without causing interruptions or significant changes to school operations. As a result, the project is operationally viable.

iii. Economic Feasibility

This system is economically feasible. This project was done using openly and freely available development tools, and programming languages. There are no extra human costs as this project is just done by ourselves. As we had completed this project, we only spent time finishing this project. [7]

iv. Schedule Analysis

This includes the project schedule and all time allocated for their completion. The Gantt chart is as follows:

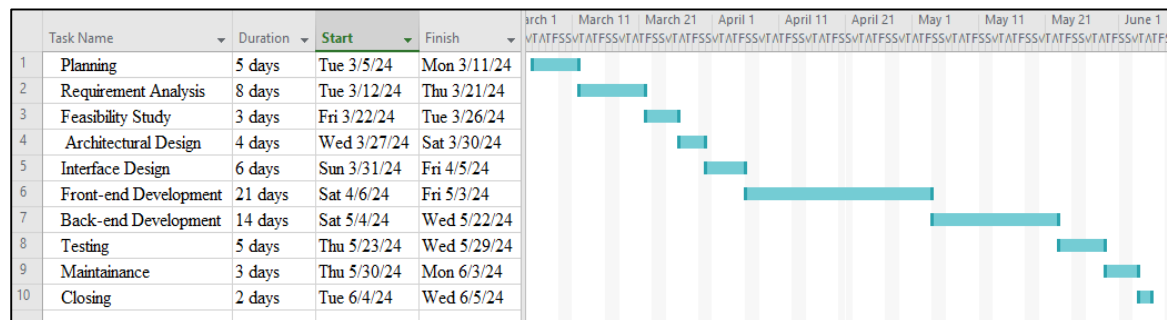


Figure 3.4 Gantt Chart

It represents the timeline of the project. The project has been completed on the given time and date as shown in the Gantt chart. Some phase takes more time and some phase take less days of time to complete it. It included all the required and important phases and time span to complete this project. These phases have been carried out on the following dates shown in the chart.

3.1.3 Data Modeling (ER-Diagram)

The Entity-Relationship (ER) Diagram for the **Smart School** visually represents the database schema for managing student, teacher, and attendance. It illustrates how these entities are related and how they interact within the system. This diagram serves as a blueprint for designing and implementing the database for the school attendance management system, ensuring efficient data organization and retrieval. [8]

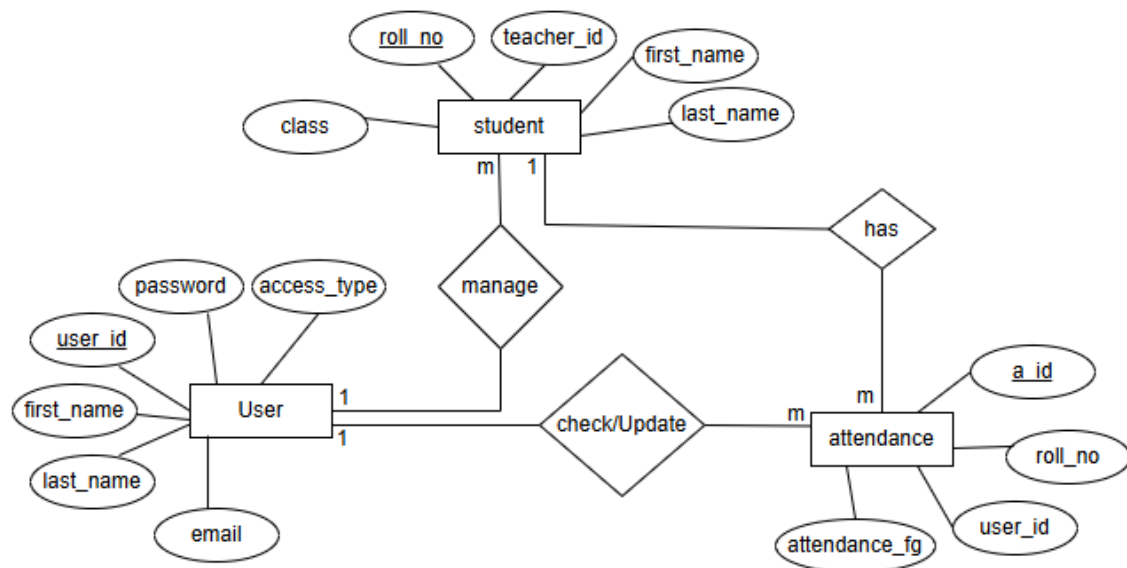


Figure 3.5 ER Diagram

3.1.4 DFD of the System

A diagram of the Level 0 DFD of the system, **Smart School**, is shown in the figure. Firstly, the user requests to log into the website, and after the request is approved, the user can check the notes. The administrator can manage or perform CRUD operations on the website's notes. While the teacher updates homework and Attendance report of students.

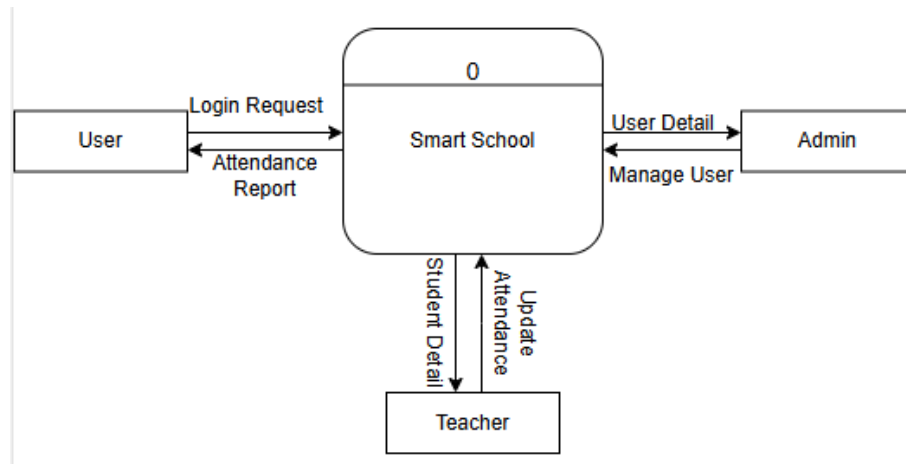


Figure 3.6 Level 0 DFD

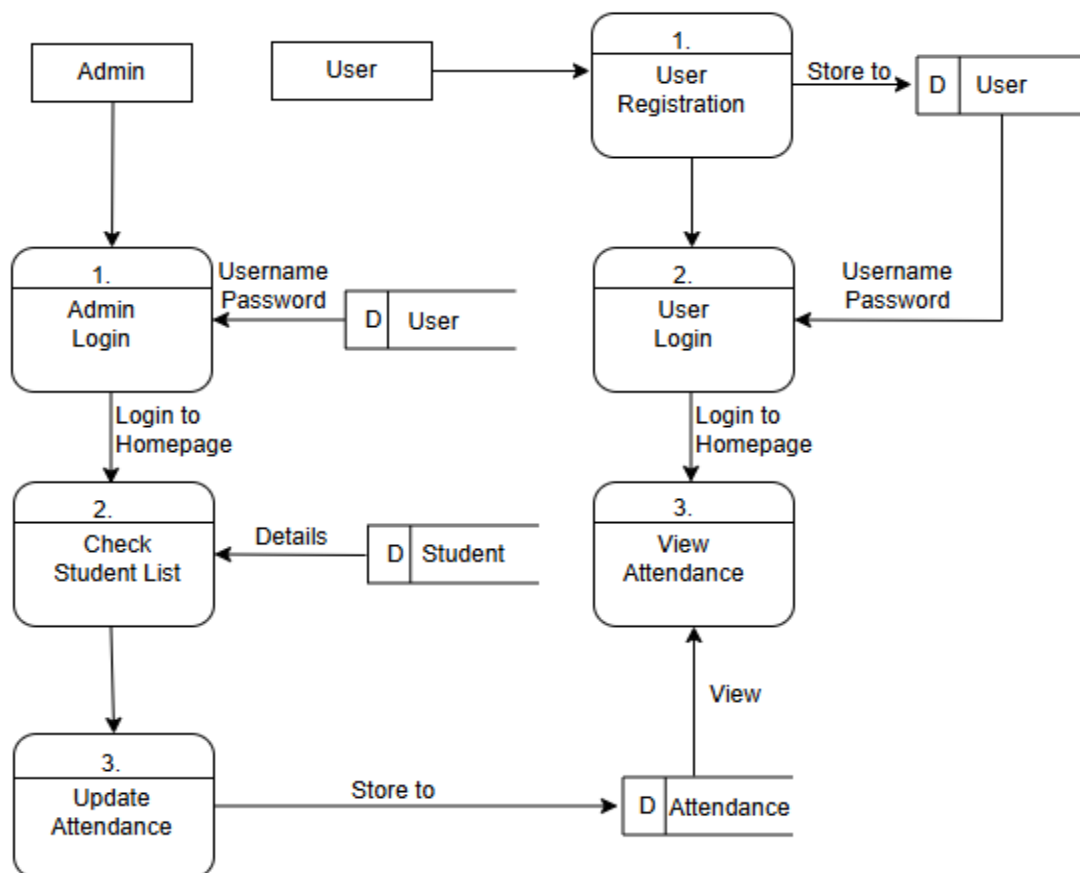


Figure 3.7 Level 1 DFD

3.2 System Design

3.2.1 Architectural Design

The process of determining the subsystems that comprise a system and the architecture supporting subsystem control and communication is known as architectural design.

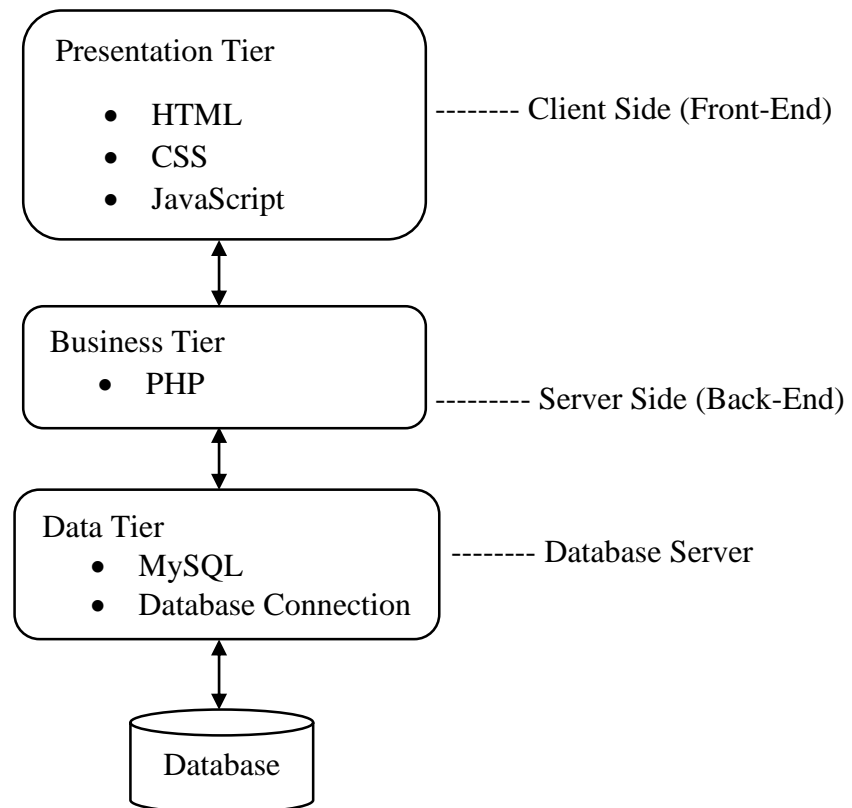


Figure 3.8 Architectural Design

3.2.2 Database Schema Design

The **Smart School** System's database design schema organizes essential information into structured tables, including User, Students and Attendance.

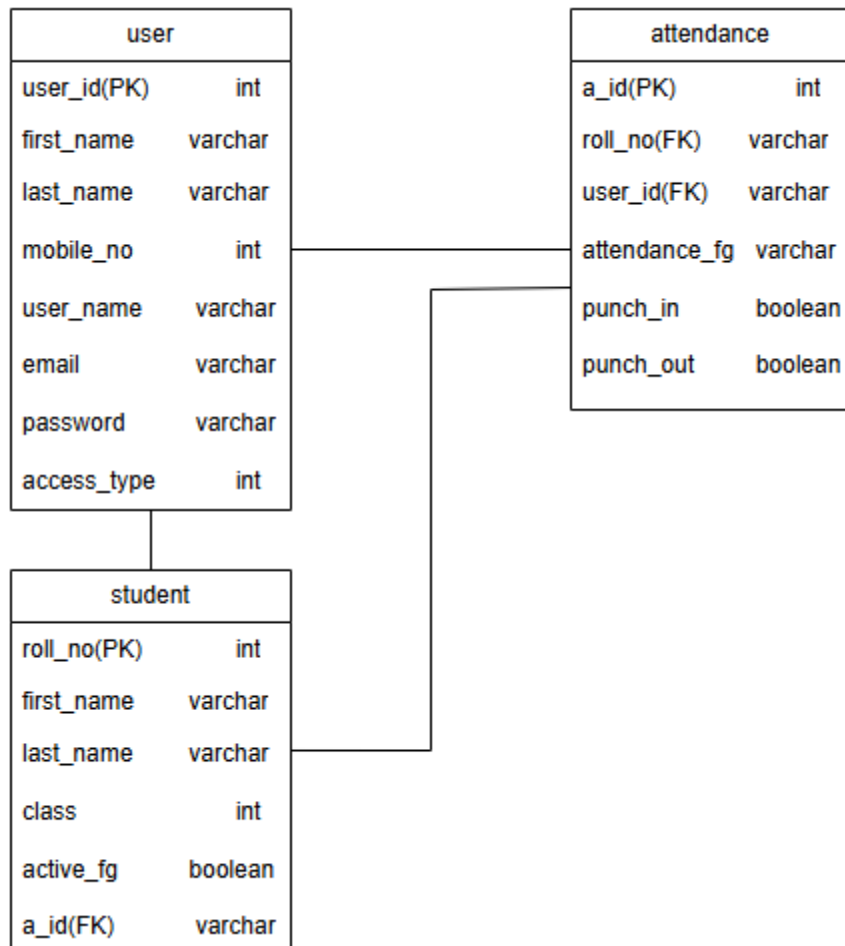


Figure 3.9 Database Schema

3.2.3 Interface Design

The UI design for the **Smart School** System focuses on user-friendliness and intuitive navigation, ensuring a seamless experience for user and administrators. The interface features clear, accessible menus and dashboards tailored to each user role, allowing easy access to attendance report. The design prioritizes responsiveness and accessibility, making the system usable across various devices and ensuring that users can interact with the system efficiently and effectively.

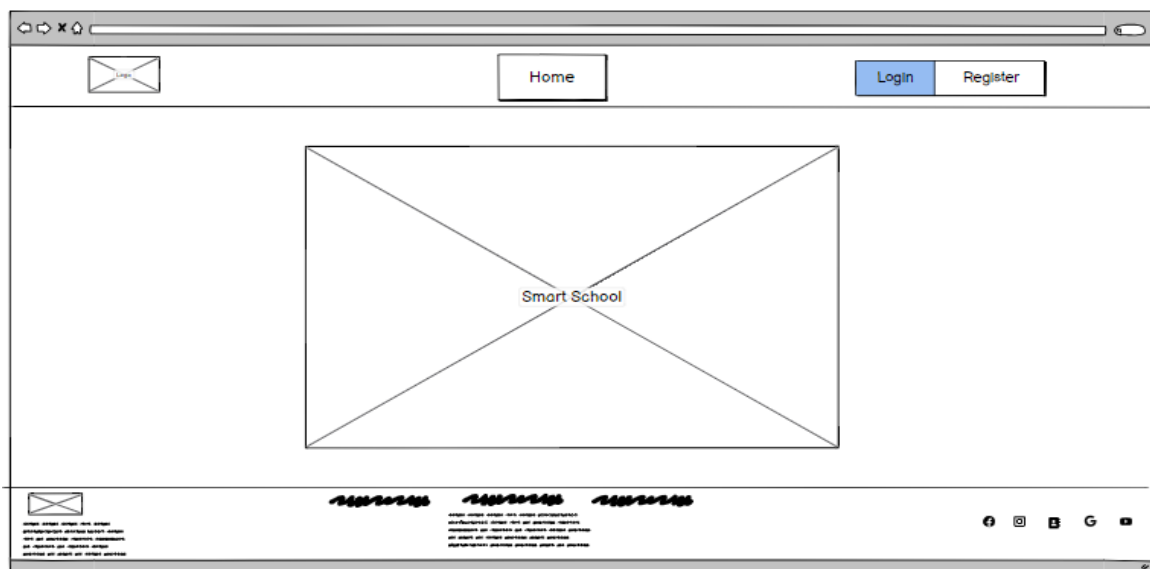


Figure 3.10 User Interface Design for User Dashboard

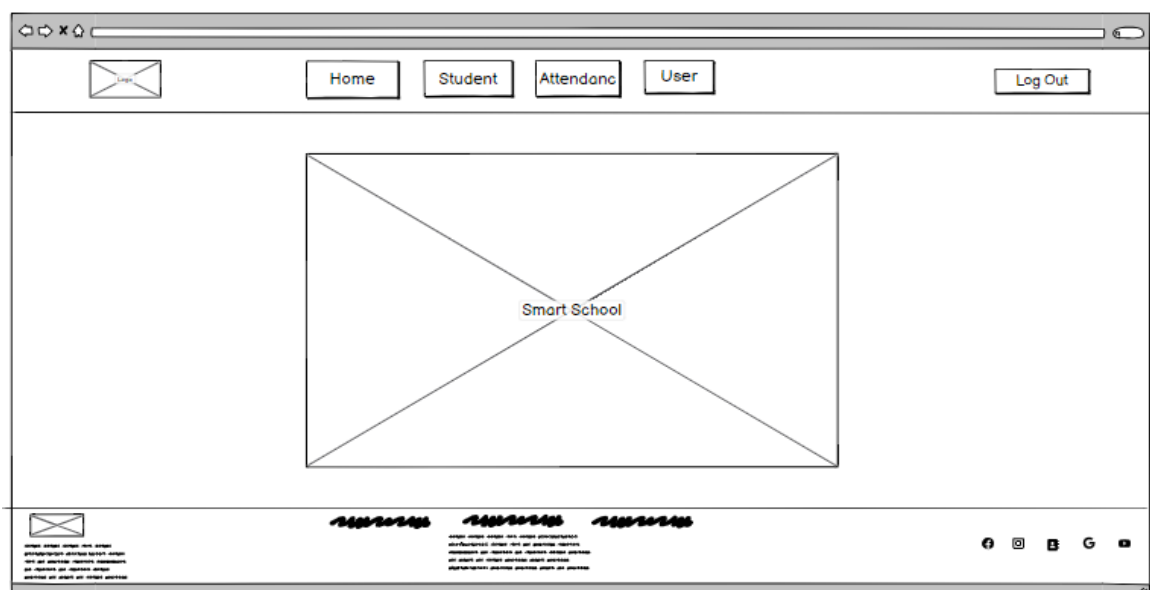


Figure 3.11 UI for Admin Dashboard

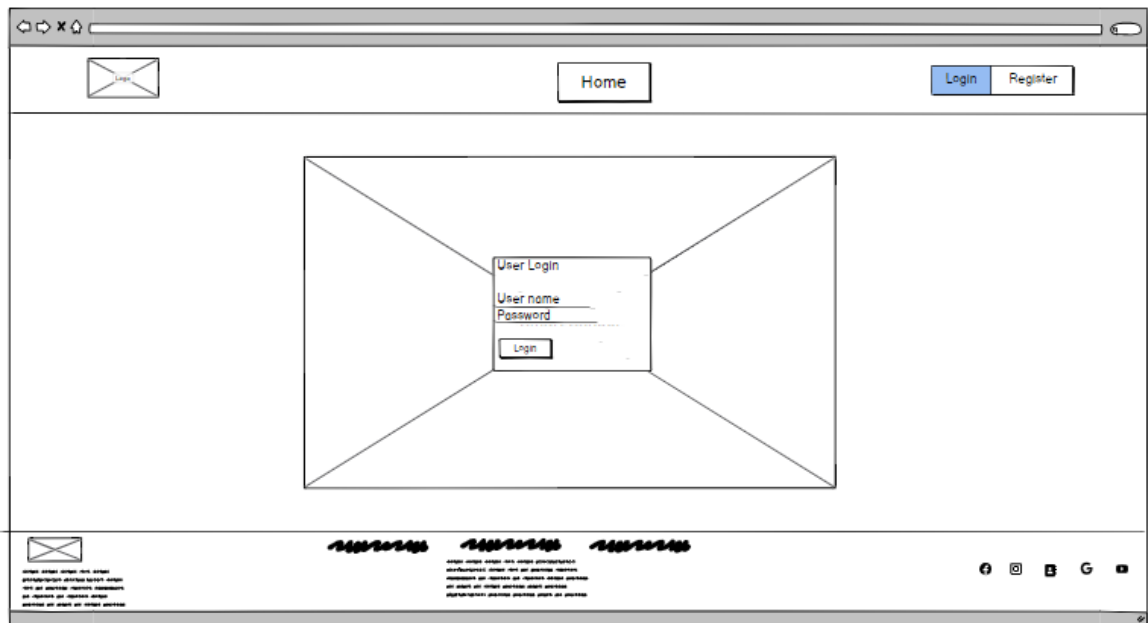
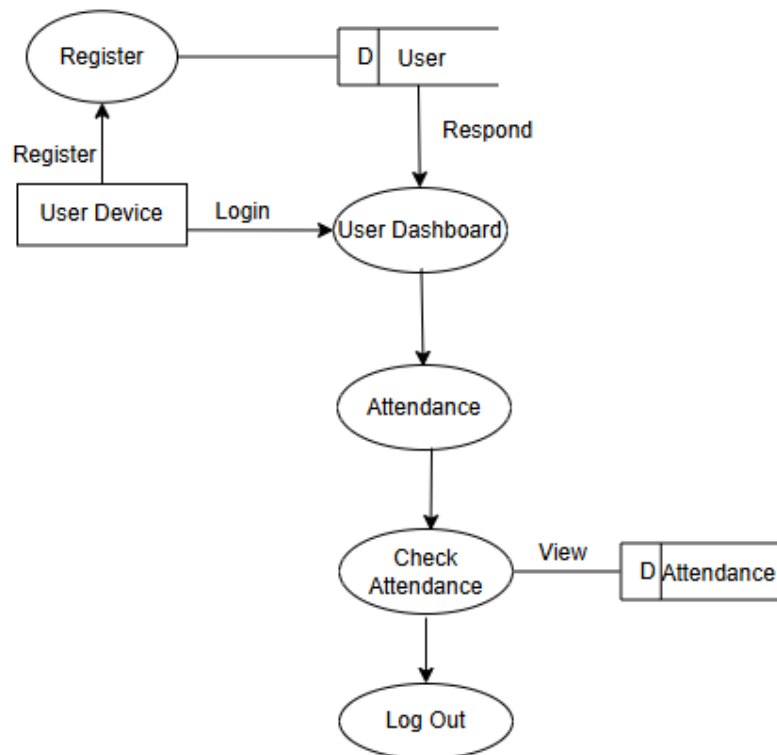


Figure 3.12 UI for Login Page

3.2.4 Physical DFD

A Physical DFD provides a detailed view of how data flows through the system, including physical resources such as hardware, software, and storage locations. Here's a comprehensive Physical DFD for the **Smart School System**.



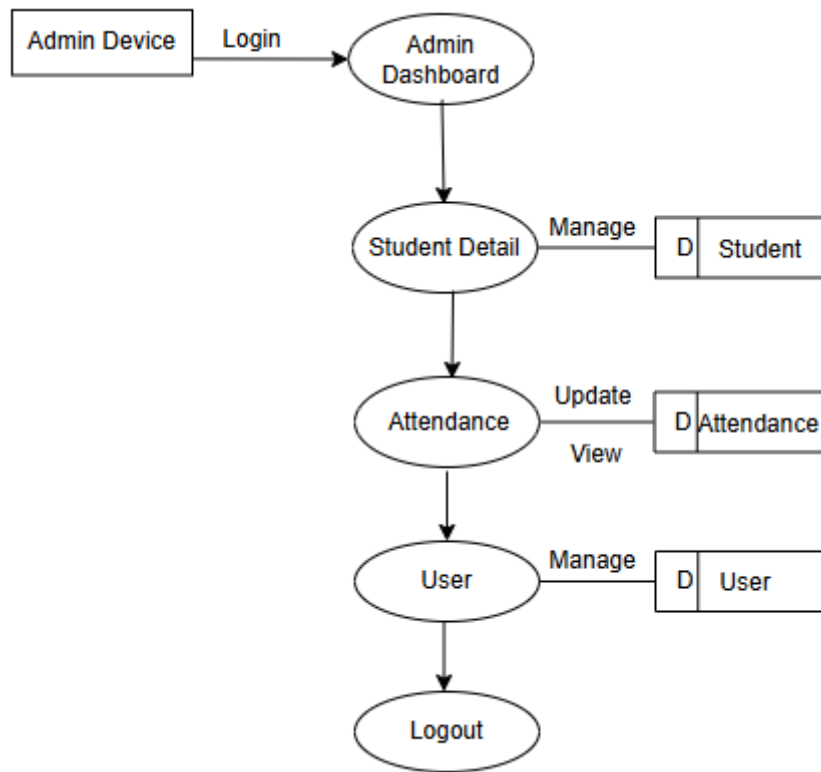


Figure 3.13 Physical DFD of Smart School

CHAPTER 4

IMPLEMENTATION AND TESTING

4.1 Implementation

We have implemented the theoretical design into a functional system. The most important phase in creating a new, successful system and instilling users' faith in its ability to function successfully and efficiently. Only when extensive testing is completed and it is determined that the system operates as intended by the specification, can it be put into use.

4.1.1 Tools Used

Tools that are used while designing this website are:

Front end: HTML, CSS, JavaScript

i. HTML:

This project uses HTML to organize various web pages and their elements. It is employed to design the structure of each page, encompassing headers, footers, navigation menus, links, images, and forms.

ii. CSS:

This project uses CSS to style HTML elements and provide the website with its visual appearance. It controls and defines the website's layout, fonts, colors, and overall design. Various types of CSS, such as internal, external, and inline CSS, are used in the design of this system. Media queries in CSS are implemented to ensure a responsive design.

iii. JavaScript:

This project uses JavaScript to incorporate interactive features. It is employed to create mobile-friendly navigation toggles and to validate user input on forms, ensuring data integrity. It enables dynamic and interactive web pages by manipulating the DOM, handling events, validating forms, and communicating with the server without reloading the page (using AJAX), enhancing user experience.

Back end: PHP, MySQL

iv. PHP:

In this project, PHP manages the backend logic of the website. It processes form data, handles file uploads, and performs server-side computations. This includes managing user-submitted data, tracking logged-in users through sessions, and interacting with the database to perform various operations.

v. MySQL:

In this project, MySQL is exclusively used for data storage and management. It stores user and admin credentials, notes content, comments, and other relevant information. Additionally, it handles data retrieval, manipulation, and relationship definition.
Development Tools: VS Code, XAMPP

vi. VS Code:

Visual Studio Code is a free, open-source code editor available for download from the official website for Windows, macOS, and Linux. Its versatility and support for multiple programming languages, debugging, syntax highlighting, intelligent code completion, snippets, and code refactoring make it a powerful tool that enhances productivity and streamlines the coding process.

vii. XAMPP:

XAMPP, a free and open-source cross-platform web server solution stack package, can be downloaded from the Apache Friends website. It includes Apache HTTP Server, MySQL, PHP, and Perl, simplifying the setup process for local development and testing, allowing developers to build and test web applications on their computers before deploying them to a live server.

4.1.2 Implementation Details of Modules

The system's modules are explained below:

Admin Module

i. Add Student Module

The admin add student operations module allows the admin to create and add new student and student detail.

```
$stmt = $conn->prepare("INSERT INTO
students(parent_id,teacher_id,first_name,last_name,class,active_fg,enroll_dt)
VALUES ( ?, ?, ?, ?, ?, ?, ?)");
if ($stmt === false) {
die("Prepare failed: (" . $conn->errno . ") " . $conn->error);
}
// Bind parameters
$stmt->bind_param("ssssss",
$parent_id,$teacher_id,$first_name,$last_name,$class,$active_fg,$enroll_dt);
// Execute the statement
if ($stmt->execute()) {
echo "New record created successfully";
} else {
echo "Error: " . $stmt->error;
}
```

Listing 4.1 Code Snippet for Add Student

The output for above mentioned logic is demonstrated in appendix Figure

ii. User Delete Module

The admin can delete existing user from user list and user table.

```
if ($_SERVER['REQUEST_METHOD'] == 'POST') {  
    $user_id=$_POST['user_id'];  
    $stmt = $conn->prepare("DELETE FROM users WHERE user_id = ?");  
    $stmt->bind_param("i",$user_id);  
    if ($stmt->execute()) {  
        echo "Successful";  
    } else {  
        echo "Error: " . $stmt->error;  
    }  
}
```

Listing 4.2 Code Snippet for Delete User

The output for above mentioned logic is demonstrated in appendix Figure 5.4

iii. Update Attendance Module

The admin can update attendance status of student on attendance table as it will update as 'Present' or 'Absent'.

```
if($action=='i'){  
    $stmt = $conn->prepare("insert into  
attendance(roll_no,attendance_fg,CREATE_dt)VALUES(?, ?,?)");  
    if ($stmt === false) {  
        die("Prepare failed: (" . $conn->errno . ") " . $conn->error);  
    }  
    // Bind parameters  
    $stmt->bind_param("sss", $roll_no, $state,$date);  
    // Execute the statement  
    if ($stmt->execute()) {  
        echo "New record created successfully";  
    } else {  
        echo "Error: " . $stmt->error;  
    }  
}
```

Listing 4.3 Code Snippet for attendance update

The output for above mentioned logic is demonstrated in appendix figure

User Module

User can check the attendance report of their child after logging in into the home page. So, User get information about their child is present in school or not.

```
while($row = $result->fetch_assoc()) {
    if($oldname!=$row["student_name"]){
        echo ("<tr> <td colspan=2 style='text-align: left;padding: 8px;text-
transform: capitalize; background: #666cd8;color: #fff;' >
<h4>".$row["student_name"]."<h4></td><tr>");
        $oldname=$row["student_name"];
    }
    echo "<tr><td>".$row["attendance_dt"]."</td>";
    if($row["Attandancefg"] == 'p'){
        echo "<td><i class='fa fa-check present'></i></td>";
    }
    else{
        echo "<td><i class='fa fa-times absent'></i></td>";
    }
    "<td>".$row["Attandancefg"]." "</td>";
}
```

Listing 4.4 Code Snippet for check attendance

The output for above mentioned logic is demonstrated in appendix figure

4.2 Testing

The testing phase for the **Smart School** System ensures the software operates smoothly and meets all specified requirements. Comprehensive testing for the **Smart School** System includes unit tests for individual components, integration tests for module compatibility, and system tests for overall functionality. User acceptance testing (UAT) ensures the system meets user needs. Rigorous testing identifies and fixes bugs, performance issues, and security vulnerabilities, ensuring a robust, reliable, and user-friendly system before deployment.

4.2.1 Test Cases

Open Application

Table 1 Test Case For Open Application

Test ID	Test Case Description	Test Input	Expected Output	Actual Output	Test Result
1.	Open application	localhost//new/front end/index.php	Open application with its homepage	Display the home page	Pass

User Registration

Table 2 Test Case For User Registration

Test ID	Test Case Description	Test Input	Expected Output	Actual Output	Test Result
1	Registration with an existing email	Email: ram123	Displays message for existing email.	Email already exists.	pass
3	Registration with some blank fields	Username: smartstudent1 Email: Password: stud2356 Confirm Password: stud2356	Displays an error message	Please fill out this field message displayed	Pass

User Login

Table 3 Test Case For User Login

Test ID	Test Case Description	Test Input	Expected Output	Actual Output	Test Result
1	Open Application	localhost//new/frontend/login.php	Displays the login page.	Displays the login page.	Pass
2	Login through an unregistered username	Username: gautam023 Password: gautam123	Displays message for unregistered user.	No user was found.	Pass
3	Login through an invalid user	Email: gautam885 Password: gautam123	Displays message for an invalid user.	Refreshes the page.	Pass
4	Login through an incorrect password	Email: gautam123 Password: nepal123	Displays a message for an incorrect password.	Invalid username or password.	Pass

Admin Login

Table 4 Test Case For Admin Login

Test ID	Test Case Description	Test Input	Expected Output	Actual Output	Test Result
1	Open Application	localhost//new/frontend/adminlogin.php	Displays login page.	Displays login page.	Pass
2	Login with an invalid username	Username: adminnn Password: gautam123	Displays error message	Invalid username or password.	Pass
3	Login with an invalid password	Username: smartstud123 Password: kathmandu223	Displays error message.	Invalid username or password.	Pass

4.2.2 Test Cases for System Testing

In system testing, the system is tested as a whole to ensure that it functions correctly.

User Registration

Table 5 System Test Case For Registration

Test ID	Test Case Description	Test Input	Expected Output	Actual Output	Test Result
1	Register with valid credentials and click on the sign-up button	Username: smartashish2 Email: ashish@gmail.com Password: smart123 Confirm Password: smart123	Redirect to the login page	Redirect to the login page	Pass
2	Registration with invalid credentials	Username: smartashish2 Email: ashishgmail.com Password: schoolye1 Confirm Password: schoolye1	Registration failed	Registration failed	Pass

Admin Login Process

Table 6 System Test For Admin Login

Test ID	Test Case Description	Test Input	Expected Output	Actual Output	Test Result
1	Open Application	localhost//new/backend/login.php	Displays login page.	Displays login page.	Pass
2	Login with valid admin credentials and click on the login button	Username: ashish123 Password: 123	Redirect to the admin dashboard.	Redirect to the admin dashboard.	Pass
3	Login with invalid admin credentials	Username: schoolsmw Password: nepal123	Admin login failed.	Admin login failed.	Pass

Attendance Update Process

Table 7 System Test for attendance update

Test ID	Test Case Description	Test Input	Expected Output	Actual Output	Test Result
1.	Open application	localhost//new/bac kend/login.php	Displays login page.	Displays login page.	Pass
2.	Go to attendance page	Click On attendance button	Redirect to attendance page	Redirect to attendance page	pass
3.	Update Attendance	Click on '✓' Button.	Update Attendance as Present	Updated attendance as Present	Pass
5.	Update Attendance	Click '✗' button.	Update attendance as absent.	Updated attendance as absent	Pass

User Login Process

Table 8 System Test For User Login

Test ID	Test Case Description	Test Input	Expected Output	Actual Output	Test Result
1	Login with valid user credentials and click on the login button	Username: ram123 Password: 123	Redirect to the home page	Redirect to the home page	Pass
2	Login with invalid user credentials	Username: smartstud23 Password: smart9585	User login failed	Login failed	Pass

CHAPTER 5

CONCLUSION AND FUTURE RECOMMENDATIONS

5.1 Lesson Learnt / Outcome

The development of the **Smart School** System provided valuable insights and outcomes. Key lessons learned include the importance of thorough planning and clear communication among team members to ensure smooth project execution. The necessity of rigorous testing to identify and resolve bugs and performance issues was highlighted, reinforcing the value of user feedback in refining the system. Additionally, the project underscored the significance of user-friendly UI design for enhancing the user experience. Overall, the outcome was a robust, reliable, and efficient system that meets the needs of students, teachers, parents, and administrators, enhancing the educational experience and streamlining school management.

5.2 Conclusion

The **Smart School** System project successfully demonstrated the integration of modern web technologies to create an efficient, user-friendly platform for school management. By using tools like HTML, CSS, JavaScript, PHP, MySQL, and XAMPP, the system effectively addresses the needs for smart school attendance management system for students, teachers, parents, and administrators. Rigorous planning, development, and testing phases ensured a robust and reliable system, while user feedback guided improvements in functionality and design. The final product enhances educational experiences and administrative processes, highlighting the importance of technology in modern education.

5.3 Future Recommendations

To ensure the continued success and growth of the **Smart School Attendance Management System**, several key enhancements and features are recommended. These improvements will enhance user experience, security, and scalability, keeping the system modern and efficient.

- i. **Mobile Application Development:** Create a mobile app to increase accessibility and convenience for all users.
- ii. **Enhanced Security Measures:** Implement two-factor authentication and regular security audits for better data protection.

- iii. **AI Integration:** Use AI for personalized learning experiences and automated administrative tasks.

APPENDICES

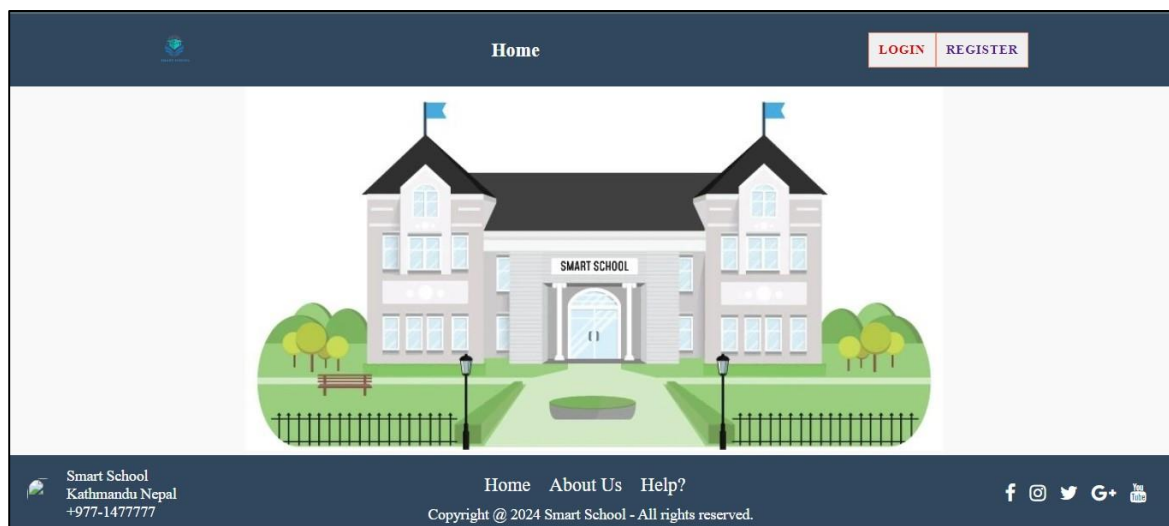


Figure 5.1 Home Page

The screenshot shows the registration form on the Smart School website. The form is titled "Registration Form" and is located in the center of the page. It contains several input fields for user registration: First Name, Last Name, Phone Number, Email, Username, Password, and Confirm Password. Each field has a placeholder text indicating what to enter. A "Submit" button is located at the bottom of the form.

Figure 5.2 Registration Form

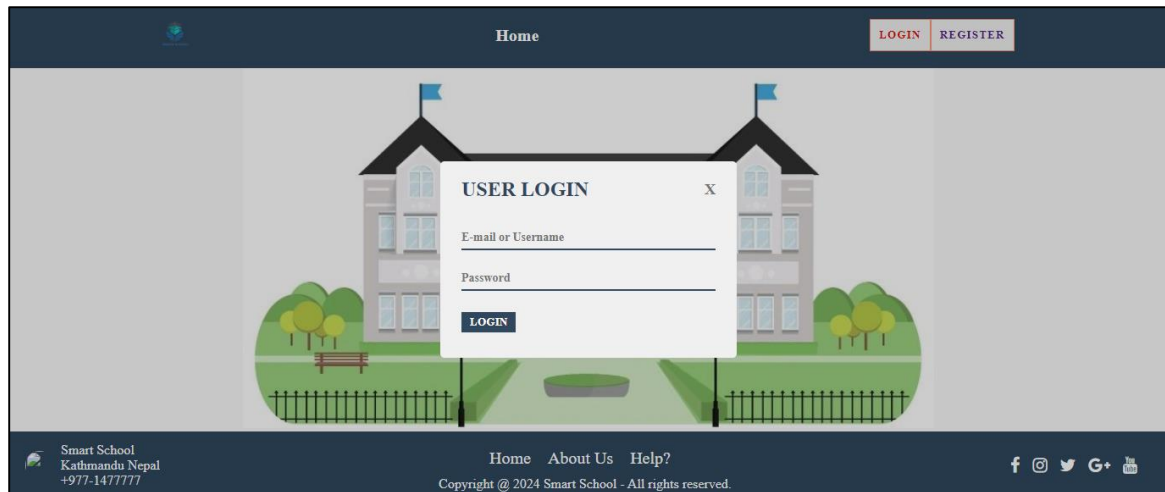


Figure 5.3 Login Page

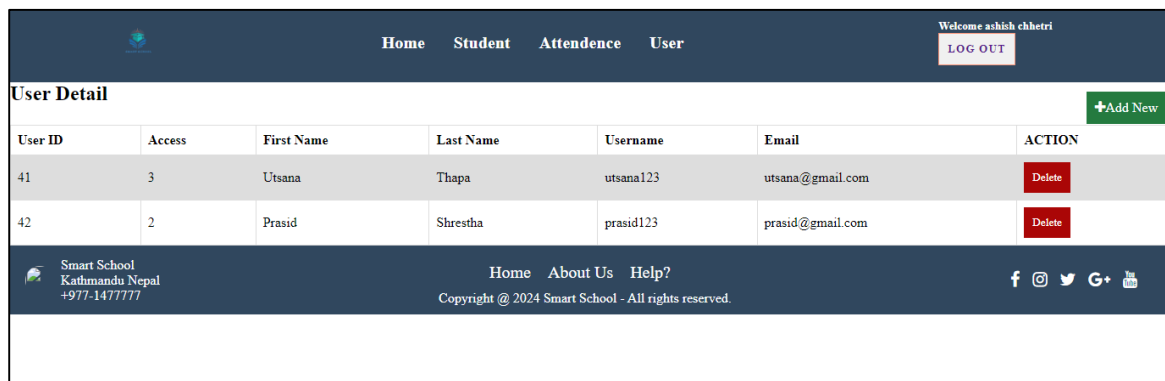


Figure 5.4: User Detail

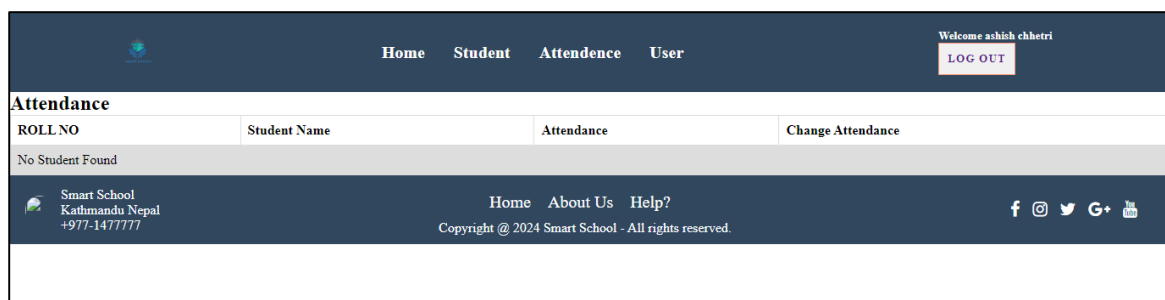




Figure 5.5: Attendance Page


Home Student Attendance User

Welcome ashish chhetri
LOG OUT

Attendance
Students Detail
User Detail

User ID	Access	First Name	Last Name	Username	Email	ACTION
34	1	ashish	chhetri	ashishchh	ashishchhetri1027@gmail.com	Delete
41	3	Utsana	Thapa	utsana123	utsana@gmail.com	Delete
42	2	Prasid	Shrestha	prasid123	prasid@gmail.com	Delete


Smart School
Kathmandu Nepal
+977-14777777

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Figure 5.6: All Detail

REFERENCES

- [1] B. S. S. I. C. Ramesh Singh Saud, System Analysis and Design, Kathmandu: KEC Publication and Distribution Pvt, Ltd., 2079.
- [2] L. L. M. a. F. W. Kellermanns, "Academy of management learning and education," 2004. [Online]. Available: journals.aom.org. [Accessed 2024].
- [3] Jun Lio, "Attendance Management System using a Mobile Device and a Web Application", Department of Socio-informatics, Faculty of Letters Chuo University 742-1 Higashinakano, Hachioji-shi, Tokyo 192-0393, Japan, 2016.
- [4] Karwan Jacksi, Falah Ibrahim, Shahab Ali, "Student Attendance Management System", University of Zakho, Iraq, 2018.
- [5] S. G. R. S. Bharamagoudar, "Web based student information management system," International journal of advanced research in computer and communication engineering, 2013.
- [6] Venkata Kalyan Polamarasetty, Muralidhar Reddy Reddem, Dheeraj Ravi, Mahith Sai Madala, "Attendance System based on Face Recognition", International Research Journal of Engineering and Technology (IRJET), Volume: 05 Issue: 04, Apr-2018.
- [7] M. G. Ramesh Singh Saud, Software Engineering, Kathmandu: KEC publication and distributor Pvt. Ltd, 2077.
- [8] I. C. Bhupendra Singh Saud, Database Management System, Kathmandu: KEC Publication and Distributor Pvt, Ltd., 2077.
- [9] B. R. R. S. S. Ram Dutta Bhatta, C Programming, Kathmandu: KEC Publication and d, 2076.

Aims International College

Lagankhel, Lalitpur

Project Supervisor Log Sheet

BCA 4th Semester

Subject: Project-I

Project Name: Smart School

Students: Ashish Chhetri Biswas
Gautam Kumar Shrestha

Supervisor: Shambhu Charan Shrestha

S.N.	Description	Date	Signature