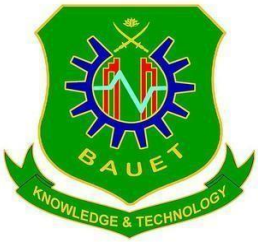
KNOWLEDGE & TECHNOLOGY

Bangladesh Army University of Engineering & Technology



Department of Computer Science and Engineering
A project report on

Project title: Routine Management System

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ABSTRACT

This project report outlines the development of a comprehensive Class Routine Management System tailored for the specific needs of the Bangladesh Army University of Engineering & Technology (BAUET). This user-friendly system is designed to efficiently manage class schedules and enhance the overall academic experience for both students and faculty members. This project aims to streamline academic operations within BAUET, enhancing the educational experience for both students and faculty members while maintaining the highest standards of data integrity and security.

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1.1 Introduction

Introducing the Class Routine Management System, a revolutionary project designed to seamlessly transform the academic experience for students and teachers at our esteemed institution. In a world characterized by rapid technological advancement, this system serves as a beacon of efficiency and convenience, catering to the diverse needs of our academic community.

For students, this system offers an all-encompassing solution. It provides a comprehensive academic calendar, keeping them informed about various academic vacations, be it summer, winter, Eid, or any other break, ensuring they can plan their academic endeavors effectively. It offers access to both the permanent class routine and real-time updates, ensuring students are always in the know about their class schedules. In the event of a teacher altering their class schedule, this system not only notifies students but also sends email notifications to the respective semester, assuring transparency and communication. Students can also explore detailed information about their teachers and subjects, streamlining their academic journey. Teachers are empowered through their admin privileges within the system. They can easily customize and update their class schedules, ensuring flexibility and efficiency. The system aids teachers in managing available class times, preventing scheduling conflicts, and promoting effective time utilization. It eliminates the need for direct student-teacher communication by directly connecting teachers with their students, streamlining information flow and improving the educational experience.

In this project report, we delve into the development, implementation, and benefits of the Class Routine Management System, highlighting its role in enhancing communication, providing comprehensive information, and ultimately, elevating the academic experience for our entire academic community.

1.2 Background

In the realm of higher education, the Class Routine Management System project represents a vital step towards modernizing and optimizing the academic experience for students and faculty members alike at our institution. With a growing emphasis on transparency and convenience, this project addresses the need for a robust system that centralizes essential information for all stakeholders.

For students, the system promises a one-stop platform to access comprehensive academic calendars, including details about various academic vacations, permanent class schedules, and real-time updates on class routines. Furthermore, the system ensures efficient communication by sending email notifications whenever class schedules are altered, keeping students informed at all times. Additionally, students can effortlessly retrieve information about their instructors and the subjects they teach, fostering a better understanding of their educational journey. Teachers, who have administrative privileges, benefit from a user-friendly interface that enables them to customize and manage their class routines efficiently. The system facilitates a dynamic and responsive scheduling process, alerting teachers to any scheduling conflicts and enabling them to adapt their teaching hours to better suit their needs. By streamlining communication and information dissemination, this project endeavors to enhance the academic environment, ensuring that both students and teachers can focus on the core of education without unnecessary administrative obstacles.

1.2.1 Routine Management System: A Technological Odyssey

"Routine Management System" is a cutting-edge project designed to revolutionize the class routine management process. For students, it offers a one-stop solution to access academic calendars, permanent and updated class schedules, and real-time notifications for any changes. Email notifications keep students informed. They can also explore teacher-subject details. The system maintains a comprehensive student database. Teachers, as administrators, enjoy the flexibility to customize and update routines, making class management seamless. The system alerts teachers about conflicting class times, ensuring error-free scheduling. It connects teachers directly with students, eliminating the need for separate communication. This project promises to streamline academic management, enhancing the experience for all stakeholders.

1.2.2 The Limitations of this technology:

While the Class Routine Management System outlined in this project report offers significant benefits for students and teachers, it is essential to acknowledge its limitations to provide a complete perspective. Here are some of the constraints and limitations of this technology:

Internet Connectivity Dependency: This system relies heavily on internet connectivity. Any disruptions in the internet service may hinder students and teachers from accessing or updating class schedules promptly.

Data Security and Privacy Concerns: Storing and managing student data electronically raises concerns about data security and privacy. The system must adhere to strict security measures to protect sensitive information from potential breaches.

Technical Proficiency: Not all students and teachers may be equally proficient with technology. Some may struggle to navigate the system, which could result in a digital divide and unequal access to information.

System Reliability: The system's effectiveness depends on its reliability. Technical glitches, server downtime, or software bugs could disrupt its operation, potentially causing confusion and inconvenience.

Limited Access for Non-Admin Teachers: Teachers who are not administrators may have limited flexibility in customizing routines. This could be a limitation for part-time or visiting faculty who need to adapt to existing schedules.

Notification Overload: Excessive notifications can overwhelm students' email inboxes. Striking the right balance between keeping students informed and not inundating them with messages is crucial.

Manual Errors: While the system can detect scheduling conflicts to some extent, it may not catch all human errors. Teachers inputting incorrect information or failing to update schedules may lead to inaccuracies.

Resource Requirements: Maintaining the system, ensuring data accuracy, and providing user support for all demand resources. Small educational institutions with limited budgets may struggle to implement and sustain such a system effectively.

Resistance to Change: Implementing a new system can face resistance from students and teachers who are accustomed to traditional methods. Adapting to this technology might take time and effort.

Accessibility and Inclusivity: Ensuring that the system is accessible to all, including students with disabilities, can be challenging and may require additional features to meet accessibility standards.

1.2.3 Motivations for Implementation:

The implementation of the Class Routine Management System is motivated by the pressing need for an efficient and technologically advanced solution to enhance the academic experience for both students and teachers. In an educational institution like ours, it is imperative to provide students with easy access to crucial information, such as academic vacation dates, permanent and updated class routines, and real-time class schedule changes. This system aims to promote transparency and communication by sending email notifications to students, ensuring they are always informed about any modifications in their class schedules. For teachers, this system offers a user-friendly interface that empowers them to customize their class routines, update class times, and identify available slots for classes. It minimizes scheduling conflicts, streamlines class management, and reduces the need for manual communication with students. The project's primary motivation is to improve efficiency, reduce administrative burdens, and create a seamless and well-organized academic environment that benefits both students and teachers, ultimately enhancing the overall educational experience.

1.2 Objective

The objectives of the Class Routine Management System project are as follows:

- **Academic Calendar Accessibility**: Develop a user-friendly platform that allows students to access and stay informed about all academic vacations, including summer, winter, Eid, and other breaks. Provide an academic calendar for reference.
- **Permanent and Updated Class Schedules:** Enable students to view both permanent and updated class routines, including any changes made by teachers. Ensure real-time access to class schedules.
- **Notification System**: Implement an email notification system to alert students (according to their corresponding semester) about any changes in class schedules made by teachers, ensuring timely communication.
- **Teacher-Subject Information:** Provide detailed information about which teacher is responsible for teaching which subject, along with teacher profiles and subject details, enhancing transparency and clarity for students.
- **Student Database Management**: Maintain a secure and organized database to store and manage student information.
- **Teacher Customization:** Empower teachers with administrative privileges to customize class routines and schedules.
- **Class Time Management:** Allow teachers to easily update their class timings and show their available time slots in a given week.
- **Conflict Resolution:** Implement a system that alerts teachers if they inadvertently schedule a class in a time slot already reserved by another teacher, preventing scheduling conflicts.
- **Flexibility:** Offer flexibility to teachers, enabling them to choose available time slots for classes within a week without needing to contact students directly.
- **Direct Communication:** Facilitate direct communication between teachers and students, eliminating the need for intermediaries.

1.4 Conclusion

In conclusion, the symphony of innovation that resonates throughout our project represents more than just technological advancements—it embodies a narrative of progress, challenges, and a vision for a future where Routine Management System transcends traditional boundaries. We've unearthed the potential of a system that goes beyond mere assistance; it comprehends the intricacies of each unique breakdown scenario. Our project was born from the realization that vehicle breakdowns are not just mechanical failures; they are moments of vulnerability, frustration, and uncertainty for

drivers. This realization motivated us to create a system that offers more than a quick fix; it offers reassurance and efficiency when drivers need it most.

Chapter 2

PLANNING

2.1 Introduction

The Class Routine Management System project aims to revolutionize how students and teachers at our educational institution access and interact with their academic schedules. In a rapidly changing educational environment, this system offers a comprehensive solution to address the diverse needs of both students and teachers, fostering a more efficient and convenient experience.

For students, the system provides a centralized hub where they can effortlessly access information about academic vacations, permanent class routines, and any updates to their schedules. It ensures that students are always informed, even when a teacher modifies their class timings. The system goes a step further by sending email notifications, enhancing communication, and ensuring that students stay up to date.

In addition, students can access valuable details about their courses and instructors, promoting a better understanding of their academic journey. The system also serves as a secure database for student information, ensuring data integrity. For teachers, this system grants administrative control, allowing them to customize and manage their schedules with ease. It helps teachers identify available class times, preventing scheduling conflicts. The system also offers alerts to prevent unintentional overlaps and provides flexibility in class scheduling. Most importantly, it establishes a direct, efficient communication channel between teachers and students, streamlining the entire educational process. In a dynamic educational landscape, this project will be a game-changer, enhancing the experience of both students and teachers at our institution.

2.2 Evolution of Technology

- Evolution of Technology for Class Routine Management System:
- **Manual Scheduling:** Initially, academic schedules were manually planned and posted on notice boards. Students had to rely on physical calendars to know about academic vacations and class routines.
- **Online Calendars:** The evolution began with basic online calendars, which allowed institutions to post academic vacation details and class routines. However, these calendars lacked interactivity and real-time updates.
- **Dynamic Websites:** The system evolved into dynamic websites, offering students and teachers the ability to view academic vacation information and class routines. Updates were possible but required manual interventions, making real-time changes challenging.

- **Database Integration:** With the inclusion of databases, institutions could store and retrieve information efficiently. Students could now access permanent and updated class routines, along with academic vacation details, on-demand.

- **Real-time Updates:** Technology progressed to provide real-time updates to students. Teachers could change their schedules, and students received immediate notifications through the website, enhancing communication and reducing scheduling conflicts.

- **Email Notifications:** The system incorporated email notifications, ensuring students are informed promptly when class schedules change. This feature enhances the efficiency of communication and scheduling.

- **Customization:** Teachers gained admin privileges, allowing them to customize class routines. They can now update their schedules and view available time slots in a week.

- **Conflict Detection**: The system became smarter, offering conflict detection. If a teacher attempts to schedule a class during a blocked time, the system issues an alert, preventing accidental overlaps.

- **Direct Student Connection:** The technology now connects teachers directly with students. Students no longer need to contact teachers individually for schedule changes; the system acts as the intermediary.

- **Comprehensive Database:** The database not only stores class schedules but also keeps essential student information, simplifying record-keeping and data management.

2.3 Project Background

The Class Routine Management System project is designed to revolutionize the academic experience at our institution. In an era of dynamic academic schedules, our system offers a robust solution that caters to the diverse needs of students and teachers. It empowers students to access information about academic vacations, permanent and updated class routines, and receive real-time notifications about any changes in their schedules. Additionally, the system offers detailed subject and teacher information, creating a comprehensive academic resource hub. For teachers, the system provides administrative capabilities, enabling them to customize and manage their schedules effectively. It also offers features like class time updates, conflict alerts, and seamless communication with students. By streamlining this process, the Class Routine Management System aims to enhance academic efficiency and ensure that students and teachers have the tools they need for a productive and organized educational experience.

2.3.1 The Technological Foundation

The Class Routine Management System is built upon a robust technological foundation, leveraging various technologies to create an efficient and user-friendly platform. The system's front-end is designed using HTML, CSS, and JavaScript, providing an intuitive and visually appealing user interface. It offers a seamless experience for students and teachers, facilitating easy navigation and

interaction. The back end of the system is powered by MySQL, a reliable relational database management system, ensuring data integrity and efficient data storage and retrieval. PHP serves as the server-side scripting language, handling dynamic content generation and communication between the user interface and the database. Additionally, the project employs the Bootstrap framework, which streamlines responsive web design and enhances the system's accessibility on various devices. This technological stack, combined with user-specific features and functionalities, contributes to the project's success in managing class routines and schedules effectively.

2.3.2 Real-time Data Management

The Real-time Data Management aspect of this Class Routine Management System ensures that students and teachers always have access to up-to-date and relevant information. With a user-friendly web application, students can easily view academic vacation details, permanent class routines, and any changes made by teachers. The system sends email notifications to students, keeping them informed about any modifications in their class schedules. For teachers, the system offers seamless administrative control, allowing them to customize and update their class schedules as needed. It highlights available class time slots and provides alerts if a schedule conflict arises. This real-time system empowers teachers to manage their classes efficiently, without the need for direct student communication. By using PHP, MySQL, and the Bootstrap framework, this project delivers a dynamic platform for both students and teachers. It streamlines data management, enhancing the educational experience while maintaining ease of access and communication for all users.

2.3.3 Challenges and Solutions: A Glimpse into the Technical Journey

The development of the Class Routine Management System presented several technical challenges, each demanding innovative solutions to ensure a robust and user-friendly web application.

1. User Authentication: Implementing secure user authentication for students and teachers required a careful balance between usability and data protection. We employed PHP for server-side scripting and database integration with MySQL to create a secure and efficient login system.

2. Real-time Updates: Providing students with real-time notifications of schedule changes demanded a dynamic system. We overcame this by developing a notification mechanism that triggers automatic email alerts to students upon any alterations in their class routines.

3. Flexible Teacher Customization: Allowing teachers to customize and update schedules while ensuring data integrity was complex. We used PHP and MySQL to build an admin panel where teachers could efficiently manage their schedules. The system also featured conflict alerts to prevent scheduling overlaps.

4. Scalability: Adapting the system to accommodate multiple semesters and subjects while

ensuring performance scalability required meticulous database design and structured data management.

5. Installation and Setup: Guiding users on how to set up the system locally posed a challenge. We provided clear instructions for installing and configuring a XAMPP server, importing the database, and running the project.

In conclusion, the Class Routine Management System project encountered technical challenges in areas of authentication, real-time updates, customization, scalability, and setup. These challenges were addressed using PHP, MySQL, Bootstrap, and meticulous system design. The result is a robust and effective system that simplifies routine management for students and teachers, offering a seamless and efficient academic experience.

2.4 Technological Foundations

The Class Routine Management System is built upon a robust technological foundation to ensure its functionality and efficiency. It leverages a combination of web technologies, including HTML, CSS, JavaScript, and PHP, for user-friendly and responsive UI design, server-side scripting, and data manipulation. The system relies on MySQL as the database management system to securely store and manage the extensive data related to academic schedules, student information, and teacher-admin interactions.

Furthermore, the system is developed within the Bootstrap framework, enhancing its responsiveness and user interface design. This framework ensures a consistent and visually appealing layout across various devices and screen sizes. The system's technology stack allows students to easily access academic information, including vacation details and class schedules, while also receiving real-time email notifications for schedule changes. Teachers, acting as administrators, have the flexibility to customize and update class routines effortlessly, benefiting from features like conflict alerts and available class time displays.

Overall, the technological foundations of this system enable a seamless and user-friendly experience for both students and teachers, ensuring efficient management of class schedules and academic resources.

.2.4.1 Efficiency and Feasibility

The Class Routine Management System is not only a simple and effective web application but also demonstrates remarkable efficiency and feasibility. It addresses the need for a user-friendly system that empowers both students and teachers to manage class schedules. Using well-established technologies like HTML, CSS, JavaScript, MySQL, and PHP, the system is robust and cost-effective. It enhances academic efficiency by allowing teachers to customize and update schedules seamlessly,

while students can access vital information about academic vacations, class routines, and teacher details. The email notification feature ensures students stay informed about any schedule changes. With its clear installation instructions and a user-friendly interface, the system is highly feasible and accessible for educational institutions seeking to streamline their class routine management.

2.4.3 Ensuring Database Security

Ensuring robust database security is paramount in the development of the Class Routine Management System to protect sensitive academic and personal information.

Authentication and Authorization: The system incorporates user authentication, ensuring that only authorized individuals (students, teachers, and the super admin) can access specific areas and perform designated actions. User roles and permissions are strictly defined to limit access based on need.

Data Encryption: All data transmitted between the client and the server is encrypted using secure protocols (e.g., HTTPS). This safeguards against interception and data breaches.

Input Validation: To prevent SQL injection and other forms of attacks, the system employs thorough input validation. It verifies the integrity of data entered by users before processing it.

Database Firewall: Implementing a database firewall or intrusion detection system helps monitor database activity and prevent unauthorized access. Suspicious activities trigger alerts for further investigation.

Regular Backups: Routine database backups are essential to prevent data loss due to unforeseen events, such as hardware failures, natural disasters, or cyberattacks. Backups are stored securely and can be quickly restored.

Access Logging: Comprehensive access logs are maintained to track all interactions with the database. This helps in identifying any unusual or unauthorized activities. The logs are reviewed periodically.

Patch Management: The database management system is kept up to date with security patches and updates to address known vulnerabilities.

Security Policies: Clear security policies and guidelines are established for administrators and users, detailing best practices for password management and data access.

User Education: Users are educated about security best practices, including the importance of strong, unique passwords and the risks associated with sharing login credentials.

Incident Response Plan: An incident response plan is in place to address security breaches or vulnerabilities promptly. This includes strategies for containment, eradication, and recovery.

2.4.4 Challenges and Solutions in PHP

Challenges:

User Authentication and Authorization: Implementing a system where every teacher is an admin requires robust user authentication and authorization. Ensuring that only authorized users can access and modify the system is a critical challenge.

Real-Time Updates: Providing real-time updates to students when a teacher changes their class schedule demands a reliable notification system, which can be complex to implement effectively.

Data Consistency: Maintaining data consistency in a shared environment where multiple teachers may try to update class schedules simultaneously can lead to conflicts and data integrity issues.

Solutions:

User Authentication: Implement a secure login system with role-based access control, ensuring that only authorized users (teachers) have admin privileges.

Real-Time Updates: Develop a notification system using PHP and email services that trigger automatic alerts to students when there are changes in their class schedules.

Data Consistency: Implement transaction handling and database locking mechanisms to prevent conflicts and ensure that only one teacher can make changes to a specific class schedule at a time. Use database transactions to maintain data integrity.

2.5 Conclusion

In conclusion, the planning phase of the Routine Management System has laid the foundation for a user-centric and efficient solution. With a clear roadmap, technology stack selection, and strategic considerations, we are well-prepared to embark on the development phase, poised to revolutionize the automotive assistance industry.

Chapter 3

ANALYSIS

3.1 Introduction

The Class Routine Management System is a robust and user-friendly web application that aims to streamline and modernize the management of class schedules and routines in an academic institution. Built on a foundation of HTML, CSS, JavaScript for the user interface, and PHP for server-side scripting, with MySQL as the backend database, the system leverages Bootstrap to ensure a responsive and aesthetically pleasing design.

For students, the system offers a range of features, including access to academic vacation information, permanent class schedules, and real-time updates on class routines. Notably, it provides email notifications, ensuring students are promptly informed of any changes made by their teachers. The system also offers insights into which teachers are responsible for specific subjects and maintains a secure database of student information. Teachers, as administrators of the system, benefit from features such as the ability to customize schedules, update class timings, and receive alerts in case of schedule conflicts. The system empowers them with flexibility in scheduling classes, directly connecting with students, eliminating the need for individual communication.

Overall, this project addresses the critical need for a digital solution in managing academic routines, enhancing communication, and ensuring seamless class schedule management in educational institutions.

3.2 Cost Analysis

Cost analysis is a pivotal component of project evaluation, providing insights into the financial investment required for the successful development and implementation of the "Routine Management System" project.

3.2.1 Direct Costs

The direct costs associated with the project encompass various facets crucial for its development and functionality.

3.2.1.1 Development Costs

Software Development (৳ 2000): This initial investment is crucial for coding and programming, forming the backbone of the entire project.

3.2.1.2 Data Acquisition and Training Costs

Data Collection (৳ 2500), Data Preprocessing (৳ 2000): These expenses cover the gathering, refining, and training phases of data, ensuring the robustness of the face recognition models.

3.2.1.3 Infrastructure Costs

Development and Testing Environment Setup (৳ 0): Leveraging existing resources for infrastructure minimizes direct expenses, enhancing cost-effectiveness.

3.2.1.4 Documentation Costs

Documentation Expenses (৳ 3500): Comprehensive documentation is an essential part of the project lifecycle, ensuring transparency and knowledge transferability.

Total Direct Costs: ৳ 9,500.

3.2.2 Indirect Costs

Indirect costs, though not immediately tied to the project's core development, play a crucial role in overall project management and execution.

3.2.2.2 Employee Costs

Employee Costs (৳ 2000 per team member): Allocating funds for team members ensures a motivated and skilled workforce, integral to project success.

Total Indirect Costs: ৳ 2,000.

3.3 Software Analysis

The Class Routine Management System is a web application designed to provide a streamlined and efficient way for teachers to manage class schedules and for students to access relevant academic information. The software utilizes a combination of HTML, CSS, JavaScript, PHP, and MySQL, with the Bootstrap framework for user interface design.

For students, the system offers several key features, including the ability to view academic vacation schedules, permanent class routines, and real-time updates on class schedules in case of changes made by teachers. Email notifications are also sent to students when there are modifications to their class schedules. Furthermore, students can easily access information about which teacher is responsible for teaching a specific subject, along with detailed subject and teacher profiles. The database maintains student information, ensuring data integrity. Teachers, serving as administrators, can customize their class routines, update class timings, and easily view available class slots within a week. The system offers alert mechanisms to prevent scheduling conflicts and provides flexibility in managing class assignments. It also establishes a direct channel of communication between teachers and students, eliminating the need for teachers to individually contact each student. In practical terms, students need to register to receive email notifications, while teachers receive their login credentials from the super admin. To use the system, the XAMPP server is employed, and the project files are hosted within the htdocs folder. The database files are imported into MySQL, and the project can be accessed through the web browser.

3.3.5 Real-time Database Management and Connection

The Class Routine Management System relies on a robust real-time database management and connection system to ensure the smooth functioning of the platform. The heart of this system is powered by MySQL, a popular and reliable relational database management system. MySQL stores and manages all the critical data required for maintaining class routines, academic calendars, and user information. The system connects to the MySQL database using PHP, a server-side scripting language, which facilitates dynamic data retrieval and modification. PHP scripts are responsible for processing and managing user requests, updating class schedules, and sending email notifications. PHP, in conjunction with MySQL, allows real-time data access, modification, and retrieval, ensuring that the latest class routine information is readily available to both students and teachers. This dynamic connection also enables the system to send email notifications promptly when any teacher updates their class schedule, maintaining real-time communication with students. Furthermore, the use of Bootstrap and JavaScript in the user interface enhances the user experience, making it user-friendly and responsive. This combination of technologies and databases ensures the Class Routine Management System's reliability, efficiency, and real-time functionality, making it an effective tool for students, teachers, and administrators.

3.3.8 User Experience and Interface Design

User experience (UX) and interface design are pivotal aspects of the analysis phase within the Routine Management System is dedicated to aligning with user expectations and be optimized for a seamless and efficient user experience.

- **User-Centric Approach**: Our analysis begins with a user-centric approach, focusing on understanding the diverse needs and preferences of customers, mechanics, and administrators. This perspective informs every aspect of interface design.
- **Responsive Design: We** assess the responsiveness of the system's interfaces across various devices and screen sizes. Ensuring that the application adapts gracefully to different platforms is fundamental to a positive user experience.
- **Intuitiveness:** The system's interfaces must be intuitive, allowing users to navigate effortlessly. We evaluate menu structures, button placements, and the clarity of labels to enhance ease of use.
- **Visual Consistency:** Visual elements, such as color schemes, typography, and iconography, play a crucial role in user interface design. Consistency in these elements fosters a sense of familiarity and usability.
- **Real-Time Features:** The integration of real-time features, including location tracking and instant messaging, is examined for their seamless incorporation into the user interface. These features should be readily accessible and user-friendly.

3.4 Conclusion

In conclusion, the Class Routine Management System is a well-designed web application that streamlines class scheduling and management for both students and teachers. It offers a range of features, including vacation information, class routine updates, and seamless communication. The system's use of HTML, CSS, JavaScript, MySQL, and PHP, along with the Bootstrap framework, provides a solid technological foundation. Overall, this project simplifies academic operations and enhances user experiences.

Chapter 4

DESIGN

4.1 Introduction

The introduction of this project marks the inception of an innovative solution for managing class routines in a dynamic educational environment. The Class Routine Management System is a user-centric, web-based application designed to cater to the needs of students, teachers, and administrators. By seamlessly integrating HTML, CSS, JavaScript, MySQL, and PHP, along with the Bootstrap framework, the system provides an efficient, user-friendly platform. It empowers students to stay informed about academic vacations, class schedules, and teacher-subject details while granting teachers the ability to customize and manage their class schedules effortlessly. Administrators, led by the super admin, ensure data integrity and system functionality. This project aims to revolutionize academic operations, enhancing the educational experience for all users.

4.2 Overall Interface Designing

The project homepage of the Class Routine Management System serves as the gateway to an efficient, user-friendly educational experience. It offers students, teachers, and administrators easy access to vital academic information, ensuring seamless scheduling and communication. This page embodies the project's commitment to optimizing educational processes and enhancing convenience.

Fig No.:1: Homepage for Routine Management system

4.2.1 Admin Interface

User Authentication: The admin interface features a secure login system, allowing only authorized personnel to access its functions.

Dashboard: Upon login, administrators are greeted with a user-friendly dashboard displaying key system statistics, such as the number of registered users, pending tasks, and notifications.

User Management: Admins can manage user accounts, granting or revoking access to teacher-admins, and ensuring the system's integrity.

```
110         }
111     }
112     ?>
113 </div>
114 <div align="center" style="margin-top:20px">
115     <button id="teachermanual" class="btn btn-success btn-lg">ADD TEACHER</button>
116 </div>
117
118 <div id="myModal" class="modal">
119
120     <!-- Modal content -->
121     <div class="modal-content" style="margin-top: -60px">
122         <div class="modal-header">
123             <span class="close">&times;</span>
124             <h2 id="popupHead">Add Teacher</h2>
125         </div>
126         <div class="modal-body" id="EnterTeacher">
127             <!--Admin Login Form-->
128             <div style="display:none" id="addTeacherForm">
129                 <form action="addteacherFormValidation.php" method="POST">
130                     <div class="form-group">
131                         <label for="teachername">Teacher's Name</label>
132                         <input type="text" class="form-control" id="teachername" name="TN"
133                             placeholder="Teacher's Name ...">
134                     </div>
135                     <div class="form-group">
136                         <label for="TF">Faculty No</label>
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139                     <div class="form-group">
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141                         <input type="text" class="form-control" id="alias_name" name="AL" placeholder="Alias..">
142                     </div>
143                     <div class="form-group">
144                         <label for="designation">Designation</label>
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Fig No.:2: Homepage for Routine Management system with code

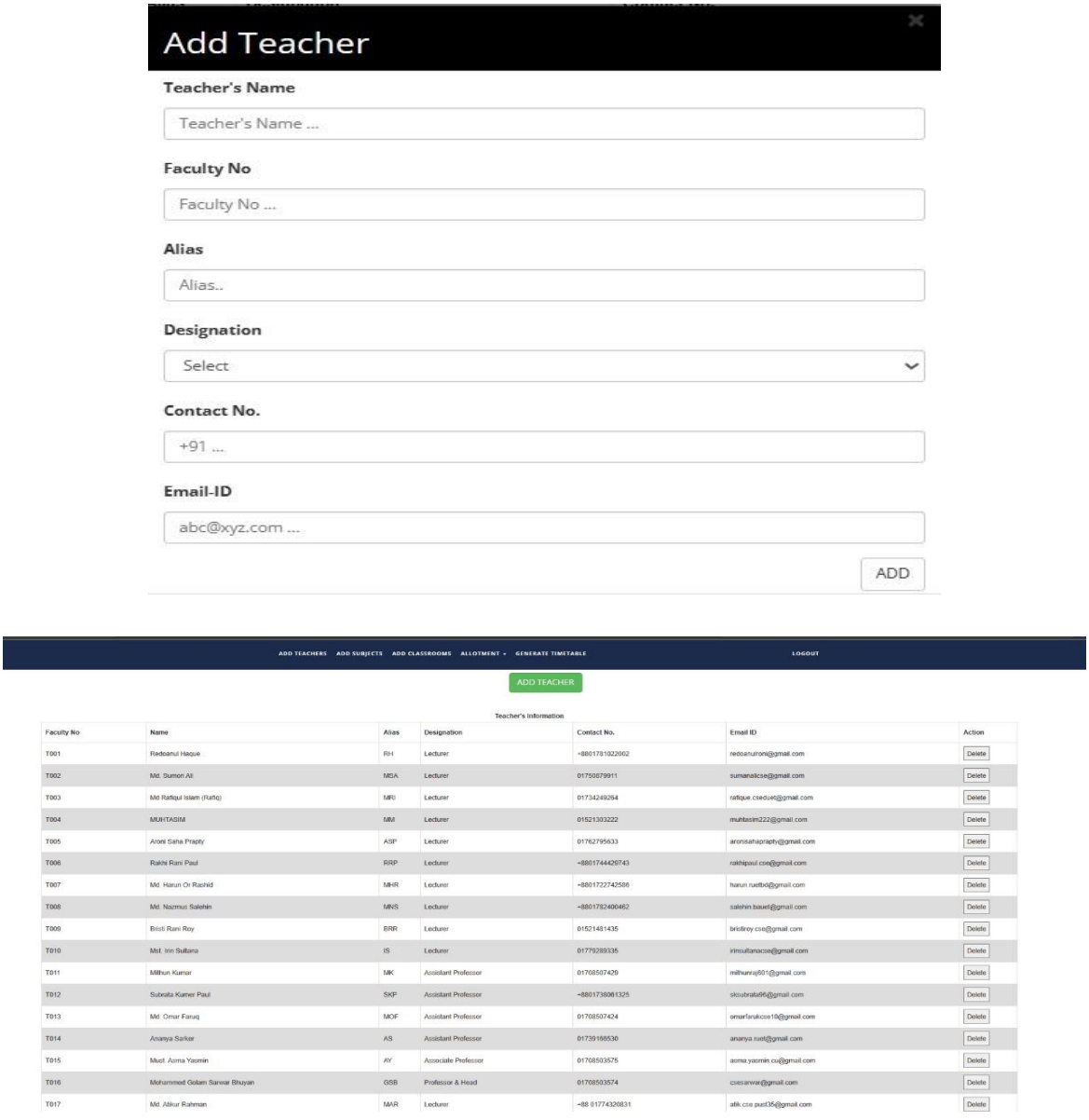


Fig No.:3: Teacher Add form of Routine Management System

Email Notifications: The system allows administrators to send email notifications to students and teachers when there are schedule changes, ensuring that everyone stays informed.

Feedback and Support: Admins can monitor and respond to user feedback, ensuring the system remains responsive to the needs of students and teachers.

Data Management: The admin interface includes data management tools to maintain data integrity and security.

System Configuration: Administrators can configure system settings, adapt to evolving needs, and ensure seamless operation.

Reporting and Analytics: The interface provides reporting features for tracking system performance and user activities, aiding in system improvement.

4.2.2 Student Interface

User Registration: Students can sign up by providing essential information, such as name, email, and student ID, creating their user profiles.

Dashboard: Upon login, students are greeted with a dashboard that offers an overview of academic information, notifications, and essential links.

Academic Calendar: Students can access the academic calendar to view details of academic vacations, ensuring they are well-informed about semester breaks and holidays.

Class Routine: The system provides students with access to both permanent and updated class routines, enabling them to stay organized and plan their study schedules effectively.

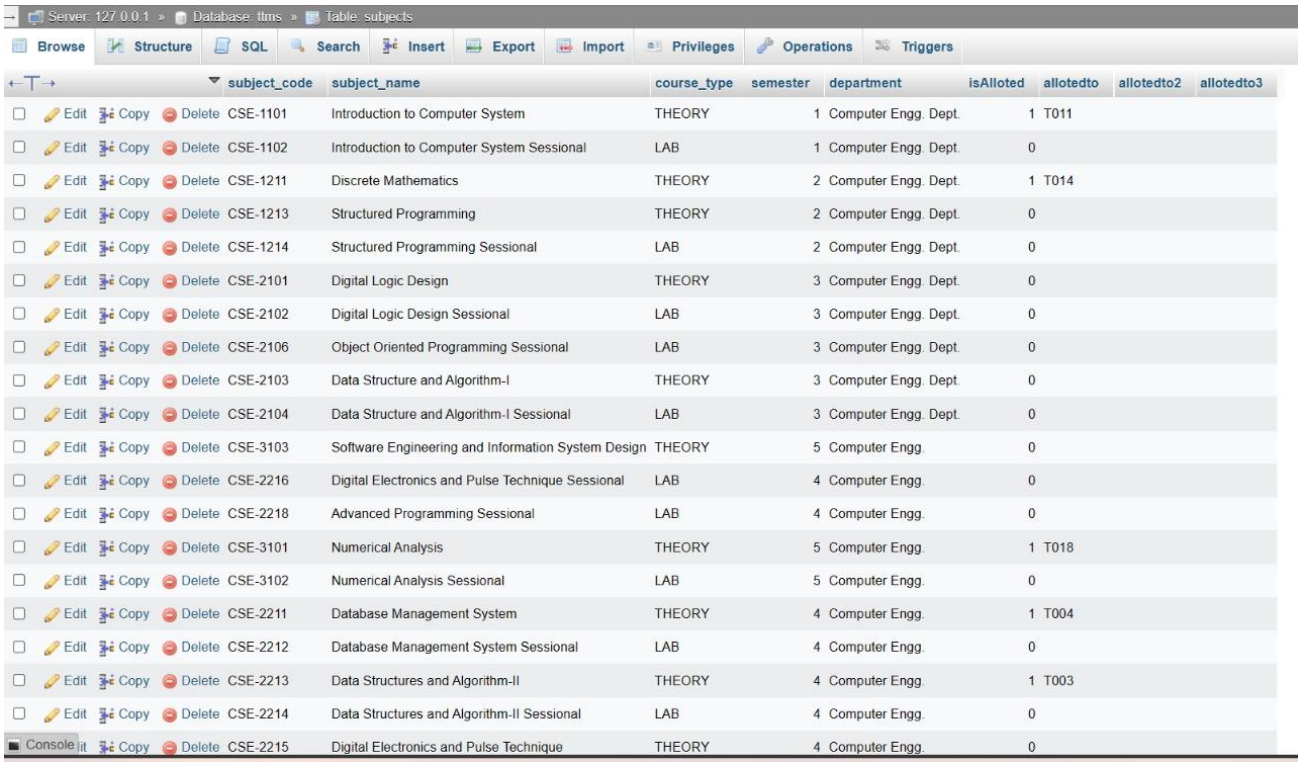
Teacher-Subject Details: Students can view comprehensive information about teachers and the subjects they teach, aiding in course selection.

Feedback and Suggestions: The interface allows students to provide feedback and suggestions, fostering an environment for system improvement and addressing their concerns.

Profile Management: Students can manage their profiles, update personal information, and customize system preferences.

Email Notifications: Students receive email notifications regarding any schedule changes, ensuring they are promptly informed and can adjust their plans.

Security and Data Privacy: The system prioritizes data security and privacy, instilling confidence in students regarding their information.



Server: 127.0.0.1 » Database: ttms » Table: subjects

Browse | Structure | SQL | Search | Insert | Export | Import | Privileges | Operations | Triggers

	subject_code	subject_name	course_type	semester	department	isAlloted	allotedto	allotedto2	allotedto3
Edit Copy Delete	CSE-1101	Introduction to Computer System	THEORY	1	Computer Engg. Dept.	1	T011		
Edit Copy Delete	CSE-1102	Introduction to Computer System Sessional	LAB	1	Computer Engg. Dept.	0			
Edit Copy Delete	CSE-1211	Discrete Mathematics	THEORY	2	Computer Engg. Dept.	1	T014		
Edit Copy Delete	CSE-1213	Structured Programming	THEORY	2	Computer Engg. Dept.	0			
Edit Copy Delete	CSE-1214	Structured Programming Sessional	LAB	2	Computer Engg. Dept.	0			
Edit Copy Delete	CSE-2101	Digital Logic Design	THEORY	3	Computer Engg. Dept.	0			
Edit Copy Delete	CSE-2102	Digital Logic Design Sessional	LAB	3	Computer Engg. Dept.	0			
Edit Copy Delete	CSE-2106	Object Oriented Programming Sessional	LAB	3	Computer Engg. Dept.	0			
Edit Copy Delete	CSE-2103	Data Structure and Algorithm-I	THEORY	3	Computer Engg. Dept.	0			
Edit Copy Delete	CSE-2104	Data Structure and Algorithm-I Sessional	LAB	3	Computer Engg. Dept.	0			
Edit Copy Delete	CSE-3103	Software Engineering and Information System Design	THEORY	5	Computer Engg.	0			
Edit Copy Delete	CSE-2216	Digital Electronics and Pulse Technique Sessional	LAB	4	Computer Engg.	0			
Edit Copy Delete	CSE-2218	Advanced Programming Sessional	LAB	4	Computer Engg.	0			
Edit Copy Delete	CSE-3101	Numerical Analysis	THEORY	5	Computer Engg.	1	T018		
Edit Copy Delete	CSE-3102	Numerical Analysis Sessional	LAB	5	Computer Engg.	0			
Edit Copy Delete	CSE-2211	Database Management System	THEORY	4	Computer Engg.	1	T004		
Edit Copy Delete	CSE-2212	Database Management System Sessional	LAB	4	Computer Engg.	0			
Edit Copy Delete	CSE-2213	Data Structures and Algorithm-II	THEORY	4	Computer Engg.	1	T003		
Edit Copy Delete	CSE-2214	Data Structures and Algorithm-II Sessional	LAB	4	Computer Engg.	0			
Edit Copy Delete	CSE-2215	Digital Electronics and Pulse Technique	THEORY	4	Computer Engg.	0			

Console

Fig No.:4: Database of Table creation (Subject)

```
110         }
111     }
112     ?>
113 </div>
114 <div align="center" style="margin-top:20px">
115     <button id="teachermanual" class="btn btn-success btn-lg">ADD TEACHER</button>
116 </div>
117
118 <div id="myModal" class="modal">
119
120     <!-- Modal content -->
121     <div class="modal-content" style="margin-top: -60px">
122         <div class="modal-header">
123             <span class="close">&times</span>
124             <h2 id="popupHead">Add Teacher</h2>
125         </div>
126         <div class="modal-body" id="EnterTeacher">
127             <!--Admin Login Form-->
128             <div style="display:none" id="addTeacherForm">
129                 <form action="addteacherFormValidation.php" method="POST">
130                     <div class="form-group">
131                         <label for="teachername">Teacher's Name</label>
132                         <input type="text" class="form-control" id="teachername" name="TN"
133                             placeholder="Teacher's Name ...">
134                     </div>
135                     <div class="form-group">
136                         <label for="TF">Faculty No</label>
137                         <input type="text" class="form-control" id="facultyno" name="TF" placeholder="Faculty No ...">
138                     </div>
139                     <div class="form-group">
140                         <label for="TF">Alias</label>
141                         <input type="text" class="form-control" id="alias_name" name="AL" placeholder="Alias..">
142                     </div>
143                     <div class="form-group">
144                         <label for="designation">Designation</label>
```

Fig No.:5: Database connection with frontend

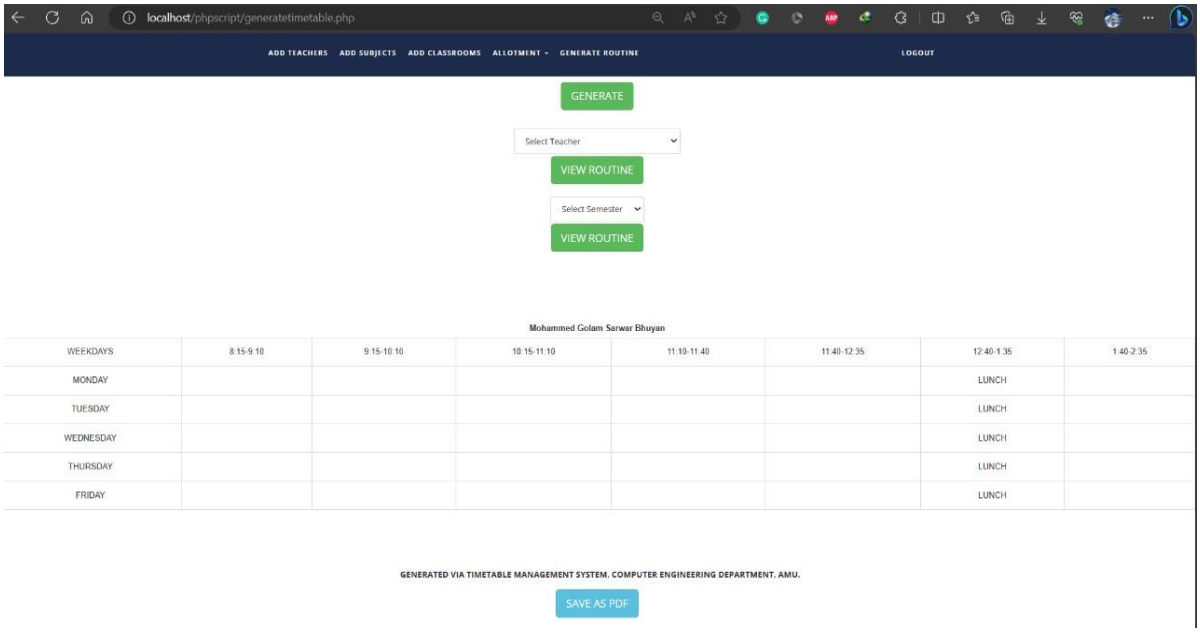


Fig No.:6: Routine generation

```
    } else {
        $file = $_FILES['file']['tmp_name'];
        $handle = fopen($file, 'r');
        $headings = true;
        while (!feof($handle)) {
            $filesop = fgetcsv($handle, 1000);

            $facno = $filesop[0];
            $name = $filesop[1];
            $alias = $filesop[2];
            $designation = $filesop[3];
            $contact = $filesop[4];
            $email = $filesop[5];
            if ($facno == "" || $facno == "Faculty No.") {
                continue;
            }
            $q = mysqli_query(mysqli_connect("localhost", "root", "", "ttms"),
                "INSERT INTO teachers VALUES ('$facno','$name','$alias','$designation','$contact','$email')");
            if ($q) {
                $sql = "CREATE TABLE " . $facno . " (
            day VARCHAR(10) PRIMARY KEY,
            period1 VARCHAR(30),
            period2 VARCHAR(30),
            period3 VARCHAR(30),
            period4 VARCHAR(30),
            period5 VARCHAR(30),
            period6 VARCHAR(30)
            )";
                mysqli_query(mysqli_connect("localhost", "root", "", "ttms"), $sql);
                $days = array('monday', 'tuesday', 'wednesday', 'thursday', 'friday', 'saturday');
                for ($i = 0; $i < 6; $i++) {
                    $day = $days[$i];
                    $sql = "INSERT into " . $facno . " VALUES('$day','','','','','','')";
                    mysqli_query(mysqli_connect("localhost", "root", "", "ttms"), $sql);
                }
            }
        }
```

Fig No.:7: MySQL code for inserting data into routine

4.3.3 Teachers Interface

Login and User Authentication: The teacher interface begins with a secure login process to verify authorized access and protect data integrity.

Dashboard: Upon login, teachers are presented with a user-friendly dashboard displaying key information such as class schedules, notifications, and quick links.

Class Routine Management: Teachers can easily customize their class schedules, updating class timings and other details as needed.

Available Class Time: The system offers a feature that helps teachers visualize available slots in their weekly schedules, facilitating efficient class planning.

Alerts and Conflict Resolution: Teachers receive alerts if they attempt to schedule classes in time slots already occupied by other teachers, preventing scheduling conflicts.

Communication with Students: Teachers can directly input class information into the system, ensuring students are promptly informed of any changes, eliminating the need for direct communication.

Profile Management: The interface allows teachers to manage their profiles, update personal details, and customize system preferences.

Data Security: The system prioritizes data security, ensuring teachers' information remains protected and confidential.

Feedback and Support: Teachers can provide feedback and suggestions, contributing to system improvement and addressing any concerns they may have

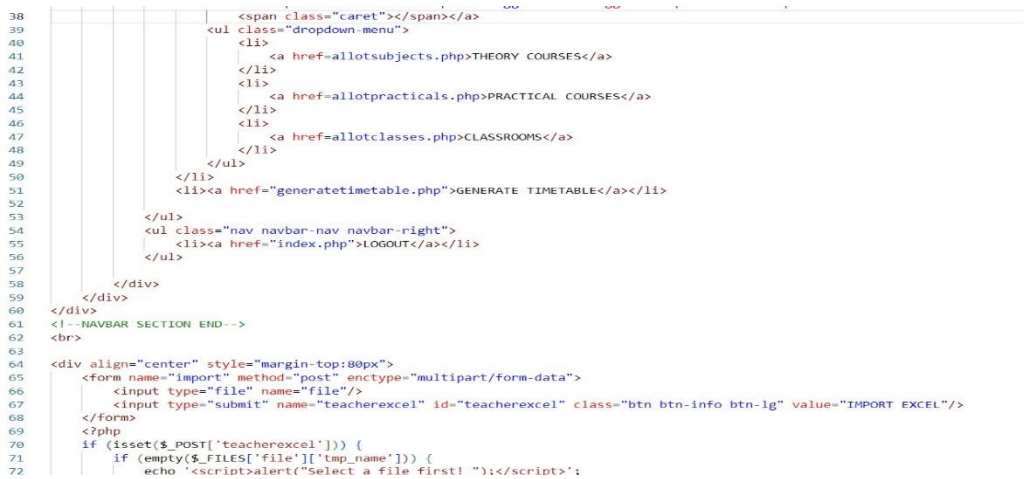


Fig No.:9: Routine Generation Code

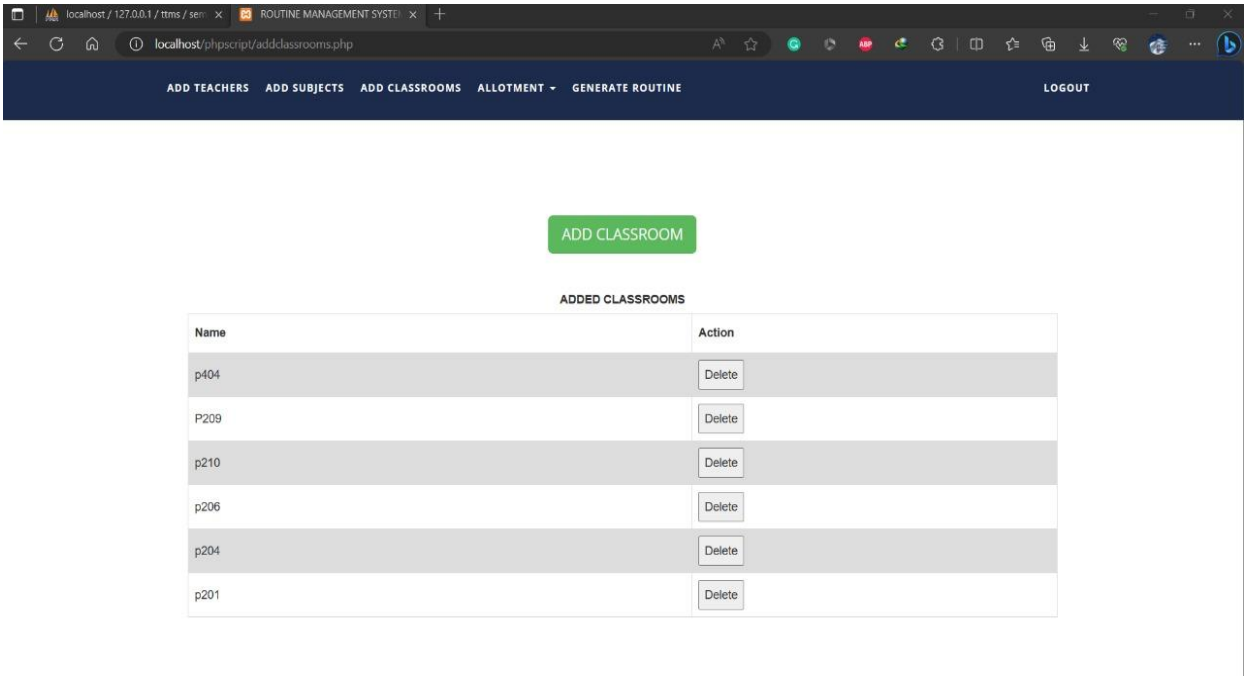


Fig No.:5: Classroom allotment

4.12 Conclusion

In conclusion, the Class Routine Management System has successfully addressed the complex and evolving demands of the education sector. By harnessing modern web technologies and thoughtful design, it offers a robust platform for students, teachers, and administrators. This project stands as a testament to the potential of technology to streamline educational operations, foster convenience, and enhance the overall academic experience. The future holds promise for even further advancements, continually adapting to the evolving needs of educational institutions and their stakeholders.

Chapter 5

Methodology

5.1 Introduction

The development of our Class Routine Management System prioritizes the achievement of system objectives with a strong focus on user-friendliness, efficiency, and data security. Here's an overview of our approach:

- **Requirement Analysis:** We began the project by conducting a thorough analysis of the requirements for students, teachers, and administrators. This phase involved identifying and documenting the unique needs and expectations of each user group.
- **Design and Prototyping:** Once the requirements were well-defined, we proceeded to the design phase. Here, we created wireframes, prototypes, and mockups to visualize the system's user interfaces, ensuring a user-friendly experience.
- **Development:** With the design in place, we entered the development phase. We used HTML, CSS, and JavaScript to build the core functionalities of the system. This involved creating features for class routine management, academic vacation information, and real-time notifications.
- **Database Implementation**: Simultaneously, we designed and implemented the MySQL database. This database was carefully structured to ensure data integrity, security, and efficient data retrieval.
- **User Feedback Integration:** We integrated mechanisms for users to provide feedback, fostering continuous improvement and alignment with user preferences. This ensures that the system evolves to better serve the academic community.
- **User Training and Documentation:** To ensure a seamless transition to the new system, we provided user training materials and comprehensive documentation for administrators, teachers, and students, ensuring that everyone can effectively utilize the system for their unique needs.

5.2 Proposed Methodology

User Manual for Admin:

1. Login:

- To access your admin panel, use the username and password provided by the super admin.

- Log in through the login page, and you'll be directed to the admin dashboard.

2. Dashboard:

- The dashboard provides an overview of key system statistics, including the number of

registered students and teachers.

- Here, you can navigate to different sections and manage the system efficiently.

3. **Managing Academic Vacations**:

Under the "Manage Vacations" section, you can add, edit, or delete academic vacation information such as summer, winter, Eid, and other vacations.

4. Managing Class Routines:

- You have the authority to customize class schedules.
- Use the "Manage Class Routine" option to modify permanent class routines.
- The "Update Class Routine" section allows you to view and edit class schedules for individual weeks, as submitted by teachers in specific semester pages.

5. Student Registration:

- For students to receive email notifications, they must register.
- If students need to sign up, guide them to the "Student Registration" section, and ensure they provide valid information.

6. Communication:

The system handles notifications. It will automatically notify students when any teacher makes changes to class schedules.

7. Flexibility for Teachers:

Teachers have the flexibility to input and update their class schedules as per their availability.

8. Troubleshooting:

If a teacher tries to schedule a class in a portion already booked by another teacher, the system will generate an alert.

9. Maintaining the System:

- You have the responsibility to oversee and manage the entire system's operation, including user data. Ensure data integrity and security.
- Please note that the system uses HTML, CSS, JavaScript, MySQL for the database,

and PHP for server-side scripting, with the Bootstrap framework for UI design. Make sure to follow the installation instructions provided in the project documentation to set up the system.

User Manual for Students:

- **Registration:** To receive email notifications about any class schedule changes, all students need to register. Simply click on the "Student Registration" option in the main menu and fill in your details.

- **View Class Routine:** Access your permanent class routine on the "Class Routine" page and check for any updates in the "Updated Class Routine" section.

- **Academic Vacations:** Stay informed about academic vacations such as summer, winter, Eid, and other holidays through the "Academic Calendar."

- **Teacher and Subject Details:** Discover which teachers are assigned to your subjects and access detailed subject information.

User Manual for Teacher:

Logging In:
- The system administrator will provide you with a unique username and password for accessing the admin panel.

Customizing Your Routine:
- Once logged in, you can customize your class schedule by updating class times. The system helps you find available class times within your week.

Handling Conflicts:
- If, by accident, you attempt to schedule a class during a time slot already allocated to another teacher, the system will alert you. This ensures smooth coordination.

Flexibility:
- You have the flexibility to adjust your class schedules as needed. Easily update or modify your classes.

No Student Contact Needed:
- Our system directly connects with students, eliminating the need for direct communication. Students receive notifications of any changes you make to your class schedules.

5.3 Conclusion

This web application streamlines class routine management, enhancing the academic experience for students and providing teachers with a flexible, user-friendly admin interface. By combining these technologies and features, the project aims to optimize the scheduling process for educational institutions.

Chapter 6

Result Analysis

6.1 Introduction

Result analysis is a critical component of the educational process, providing valuable insights into student performance and the effectiveness of teaching methodologies. It involves the systematic examination and interpretation of academic outcomes, such as test scores, grades, and assessments, to evaluate the impact of instructional strategies and identify areas for improvement. Result analysis helps educators and institutions gauge the success of their curriculum, pinpoint strengths and weaknesses, and make data-driven decisions for future planning. Moreover, it offers students an opportunity to reflect on their progress and make informed choices about their educational paths. In an era of increasing emphasis on educational accountability and quality, result analysis is pivotal in ensuring that academic programs are aligned with learning objectives and fostering student success. This process can be a powerful tool for continuous improvement and is a cornerstone of educational evaluation and decision-making at all levels of the educational system..

6.2 Activity Analysis

For Admins:

The administrative role within the Class Routine Management System is pivotal for maintaining the system's integrity and ensuring smooth operation. Admins, represented by the super admin, have various responsibilities. They oversee the entire site, granting teacher-admins access, managing user data, and resolving any issues that may arise. Admins are responsible for updating academic vacation information, ensuring the availability of permanent class schedules, and overseeing updates to class routines made by teachers. They also play a vital role in sending email notifications to students when there are schedule changes. Furthermore, admins monitor subject and teacher details, guaranteeing accurate information for students. In essence, administrators serve as the backbone, maintaining the system's functionality and effectiveness.

For Customers:

Students engaging with the Class Routine Management System will find themselves empowered and informed. Their activities revolve around accessing, updating, and utilizing academic information effectively. Firstly, students will register to receive email notifications, ensuring they stay informed about any schedule changes, academic vacations, and important announcements.

They can view the permanent class routine to plan their academic commitments. Students have the privilege of accessing updated class routines, providing them with real-time information on class changes made by teachers. The system also offers insights into subject and teacher details, helping students choose courses more wisely. Students can provide feedback and suggestions, thereby actively participating in system improvement. In essence, their activities are oriented towards gaining easy access to academic information, staying informed, and actively contributing to their academic experience, enhancing convenience and engagement in their educational journey.

For Mechanics:

Teachers, in their role as admin within the Class Routine Management System, enjoy a range of activities aimed at simplifying class schedule management. Firstly, they can effortlessly customize their class routines, update class timings, and visualize available slots within the week for scheduling classes. The system provides flexibility, allowing teachers to adapt their schedules according to their availability. Importantly, it features alerts to prevent unintentional scheduling conflicts with other teachers. Teachers can efficiently connect with their students by inputting class information directly, eliminating the need for direct communication. Moreover, they can monitor and modify their class routines in case of changes. This system streamlines the teaching process and offers a more efficient way for educators to manage their academic commitments, enhancing the overall teaching experience.

6.3 Conclusion

In conclusion, the Class Routine Management System's activity analysis reveals that students benefit from streamlined access to academic information, teachers enjoy enhanced scheduling flexibility, and administrators maintain system integrity. This system fosters a more organized and efficient educational environment, improving the academic experience for all stakeholders involved.

Chapter 7

Conclusion

In conclusion, the Class Routine Management System is a robust and user-friendly web application that aims to streamline and enhance the academic experience for both students and teachers. This project leverages HTML, CSS, JavaScript for UI design, MySQL for the database, and PHP as the server-side scripting language, with the support of the Bootstrap framework.

For students, this system offers a plethora of features, including access to academic vacation details, permanent and updated class routines, and email notifications for any schedule changes. Students can also obtain valuable information about their instructors and subjects, all while maintaining a secure and well-organized database of student information.

Teachers, who serve as administrators of the system, benefit from a range of tools to customize their schedules, check class availability, and receive alerts in case of potential conflicts. This system promotes flexibility in managing classes and automates communication with students.

The installation and usage of the system are straightforward, making it accessible for users. By integrating all these features, the Class Routine Management System serves as a valuable tool for academic institutions to ensure a seamless, organized, and efficient academic experience.

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