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HOURLY BASED ATTENDANCE MANAGEMENT SYSTEM

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Abstract:

Attendance management is crucial for all organizations, as it can significantly influence their future success, particularly in educational institutions and both public and private sectors. To enhance performance, organizations must monitor the presence of individuals, including employees and students. However, managing student attendance during lectures has become increasingly challenging. Calculating attendance percentages manually is not only time-consuming but also prone to errors. Consequently, a robust web-based attendance management application has been developed to effectively track student participation in classes. This application facilitates electronic attendance recording, with all data securely stored in a database. The system is designed using the Model, View, and Controller (MVC) architecture and is implemented with the Laravel Framework. Additionally, JavaScript is integrated to enhance the application's functionality. MySQL serves as the database for the application. The system is structured to distinguish between theoretical and practical lesson hours, as their absence rates differ when calculating student attendance percentages. Users can easily perform data insertions, deletions, and modifications through the user-friendly graphical interface without needing to interact directly with the database tables. The system offers various ways to present information. Testing has demonstrated that the system operates effectively and is ready for use in managing student attendance across any university department.

Keywords:

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I.INTRODUCTION:

Due to the significant interest of students in classroom settings, particularly within the largest unions in university or institutional environments, tracking attendance in departments with a high student population presents considerable challenges and is often time-consuming. The process demands substantial time and effort from departmental staff to accurately compile attendance records for each student. Consequently, attendance is regarded as a crucial criterion in numerous institutions and academic organizations, serving various functions such as record-keeping, student assessment, and promoting consistent class attendance. In many developing countries, institutions require a minimum percentage of class attendance; however, devotion to this policy is often delayed by the challenges associated with traditional attendance methods. Historically, attendance was recorded using hardcopy documents, difficult in a manual system. This approach not only consumes time and resources in preparing sheets and documents but also poses risks such as loss or damage to these records, including the potential for theft.

Each individual utilizing the system is provided with a user ID and password. Roles are designated by the administrator, who possesses complete authority to assign or revoke user roles, as well as to oversee other departmental information. The admin is authorized to add, remove, and modify student details. This portal is accessible at any time and from any location. Furthermore, the system is compatible with all devices, including those with smaller screens such as mobile phones.

The primary characteristics of the system we developed include its web-based architecture, which is both fully responsive and adaptable. It can be accessed from any computer, regardless of its location. The system aims to deliver a web-based attendance solution that enables the department to monitor student information, including subjects, faculty, and related areas. Daily student attendance is recorded automatically by selecting the student's name and marking their presence or absence. Initially, users can choose a student's name and indicate their attendance status, after which the information is stored in the database by clicking the save button. Reports will be generated automatically, requiring no human intervention, ensuring accuracy and eliminating errors.

II. LITERATURE REVIEW

Punch cards, referred to as Hollerith cards, were employed for data storage in the initial stages of computing, allowing companies to store and retrieve information by inserting the card into a computer system [1].It remains one of the most widely utilized attendance systems today. Employees utilize this card to record their arrival and departure times; they simply need to hold the punch card near a reader, which will then verify the employee's attendance [2]. Numerous desktop attendance software solutions have been

developed. For instance: A desktop application was designed to monitor student attendance on a daily basis. The data for a specific class is maintained by the operators based on the information provided by the teacher. This program, when launched by a faculty member, presents a list of all students enrolled in a particular course. Attendance is recorded by selecting the student's icon and then clicking the submit button to confirm their presence [3].

III.OBJECTIVIES

The system offers real-time tracking of attendance, enabling faculty to oversee student presence as they enter the classroom. It produces precise attendance reports that assist in assessing student attendance and establishing eligibility requirements. With a user-friendly interface, the system is straightforward to operate and navigate. Additionally, it incorporates security measures, including unique usernames and passwords for faculty, to safeguard attendance data. The system is adaptable and can be tailored to suit the specific needs of various departments within the college.

IV.PROPOSED SYSTEM

The proposed system i.e. web-based system the most common attendance system that available because it is friendly and easy to use, less cost, no need extra hardware, and more than this a student cannot intentionally register fake attendance record in the daily presence sheet. So the next section will explain in details.

V.METHODOLOGY:

This software has been designed to facilitate the daily attendance tracking of students. It simplifies the process of accessing attendance records for individual students. Attendance data is entered by operators and provided by teachers for their respective classes. This software is instrumental in assessing a student's eligibility based on their attendance. Its primary aim is to modernize the traditional method of recording attendance and to automate the generation of reports at the end of or during the academic session. This project has been developed as a desktop application tailored for a specific educational institution. The technologies utilized include CSS, HTML, JavaScript, and MySQL for the backend.

The system operates under the management of Web Work, with data, status, and logic processes governed by "Action." It employs a multi-layer architecture based on J2EE, implemented through Free Marker, Web Work, and Spring. The page resources layer incorporates three technologies: HTML structures the

document, CSS specifies its style, and JavaScript controls its behaviour. In traditional web development, the presentation layer is implemented using JSP. The attendance management system comprises several modules, including the importation of course plans, as well as functionalities for adding, modifying, querying, verifying, and summarizing attendance data.

React is a widely recognized front-end JavaScript library designed for creating user interfaces and UI components. Created by Facebook, React enables developers to construct reusable UI components and develop intricate user interfaces with relative ease. A fundamental aspect of React is its component-based architecture, where each UI element functions as an independent component that can be combined with others to form complex interfaces. React employs a virtual DOM (Document Object Model) to efficiently refresh the UI in response to changes in the application's state.

The library is extensively utilized across the industry, with notable companies like Facebook, Instagram, and Airbnb incorporating React into their web applications. It boasts a large and vibrant community of developers who contribute to the library, create new tools and libraries, and share best practices. To begin using React, developers should possess a solid understanding of JavaScript and HTML/CSS. Additionally, React utilizes a syntax extension known as JSX, which allows developers to write HTML-like syntax within their JavaScript code.

React is compatible with various build tools, including Create React App, Webpack, and can also be integrated with other libraries and frameworks, such as Redux for state management and React Router for navigation. In summary, React is a robust and adaptable library for building user interfaces, and its widespread adoption and active community render it an invaluable resource for developers. Its extensive documentation and abundance of resources facilitate a smooth onboarding process for those looking to create complex applications.

The newly developed system has been tailored to meet user specifications, effectively addressing nearly all of their needs. This proposed system is designed to be user-friendly, featuring rapid data retrieval and storage, along with efficient data management. Additionally, the interface allows users to navigate the system with ease. Users can generate reports effortlessly, whether on a weekly or monthly basis, or even during the semester. Notifications can be sent to employees to encourage regular attendance. The system significantly reduces paperwork, as all data is input directly into the computer, enabling report generation through digital means. Consequently, the process is streamlined, eliminating the necessity for physical

documentation. - User-Friendly: The proposed system is designed for ease of use, with quick data retrieval and efficient data management. The graphical user interface enhances user interaction, making it simple and effective to operate the system. - Easy Report Generation: Users can generate reports with minimal effort, tailored to their needs, whether on a monthly basis or at any point during the academic session. Notifications can also be issued to students to promote regular attendance. - Minimal Paperwork: The system minimizes paperwork requirements, as all data is entered directly into the computer, allowing for immediate report generation. This approach simplifies tasks by removing the need for physical records. - Computer Operator Control: The system includes computer operator controls to minimize errors. Furthermore, the processes of storing and retrieving information are straightforward, facilitating timely and efficient work completion.

VI. **SYSTEM DESIGN:**

proposed system is structured into four distinct modules, which are outlined as follows: ➢ User Authentication: When the teacher first launches the application, a login screen will appear, prompting the teacher to input their username and password for authentication. Each teacher will receive a unique username composed of alphanumeric characters. Upon entering the correct username and password, a "success" message will be displayed, confirming the teacher's authentication and directing them to the subsequent screen.

➢ **Web Service Invocation**: In this module, the teacher must select specific details, including the subject name for the lecture, the lecture time, and the semester in which the lecture is being conducted. After making these selections, the teacher will initiate the web service by clicking a designated button on the screen. The invoked web service will return a list of all students enrolled in the specified semester and branch based on the provided input.

➢ **Attendance Marking:** Once the list of students is displayed, the teacher can proceed to mark attendance. The application will provide checkboxes next to each student's name, allowing the teacher to indicate whether each student is present or absent. The attendance details will then be sent to the remote database, officially recording attendance for that day.

➢ **Student Information Display:** After successfully marking attendance, the teacher can check the attendance record of any student at any time by entering the unique roll number assigned to each student. The displayed information will include the student's attendance percentage, the number of lectures attended for a specific subject, the number of lectures missed, and the overall attendance record.

V. FRONT-END DESIGN:

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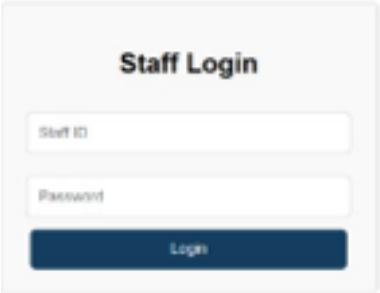
To access the website, users must first log in. A dedicated login page has been established for this purpose. The login form is designed to enhance security, ensuring that only authenticated individuals, whether administrators or regular users, can enter the system.

SCREEN SHOT (LOGIN PAGE)

Dashboard: This is the main interface of the proposed system, featuring seven buttons. Users can access their desired screens simply by clicking the corresponding button. By selecting the Home, Setup, Student, Absent, Report, or Log Out buttons, the respective screens will be displayed.



VII. BACK END DESIGN:

Microsoft SQL Server is a relational database management system created by Microsoft. This software product serves as a database server, primarily designed to store and retrieve data as requested by various software applications, which can operate on the same machine or on different machines connected through a network. To facilitate data flow and processing tasks, I have established a database called Attendance_db, within which various entities have been developed.

Report:

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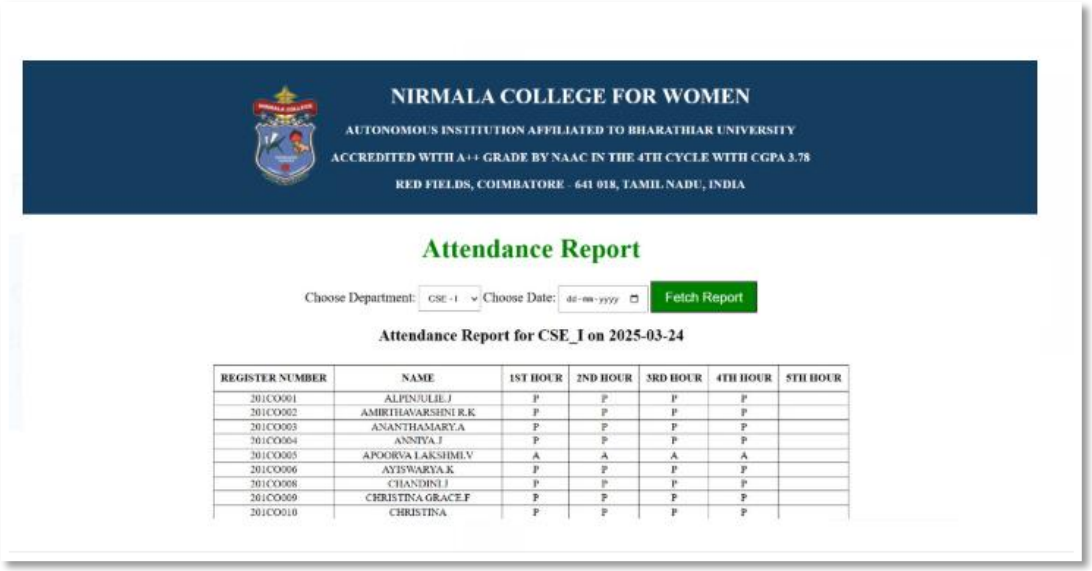

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Attendance Report

Choose Department: CSE - I Choose Date: dd-mm-yyyy Fetch Report

Attendance Report for CSE_I on 2025-03-24

REGISTER NUMBER	NAME	1ST HOUR	2ND HOUR	3RD HOUR	4TH HOUR	5TH HOUR
201CO001	ALPINJULIE.J	P	P	P	P	
201CO002	AMIRTHAVARSHINI R.K	P	P	P	P	
201CO003	ANANTHAMARY.A	P	P	P	P	
201CO004	ANNIYA.J	P	P	P	P	
201CO005	APOORVA LAKSHMI.V	A	A	A	A	
201CO006	AYISWARYA.K	P	P	P	P	
201CO008	CHANDINI.J	P	P	P	P	
201CO009	CHRISTINA GRACE.F	P	P	P	P	
201CO010	CHRISTINA	P	P	P	P	

VIII.CONCLUSION:

This study presents the development of a web-based attendance management system utilizing MySQL for server-side scripting, along with CSS, HTML, and JavaScript for design purposes, effectively achieving the objectives set for the system. This solution addresses numerous limitations associated with traditional attendance methods, significantly saving time and minimizing errors that may arise during attendance calculations. The system I have created is fully responsive, making it compatible with mobile devices, tablets, and various operating systems.

Additional advantages include:

➢ Automated and web-based for enhanced accessibility

➢ A dynamic and adaptable system

➢ Elimination of paperwork, reducing the risk of errors associated with manual attendance tracking

➢ User-friendly and convenient interface

➢ Immediate access to both current and historical records.

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