IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

ATTENDANCE MANAGEMENT SYSTEM

[1]SUNKARA SRI MAHALAKSHMI, [2]VEESAM RAMANI, [3]KURUPUDI MOHAN SAI RAJ,
[4]NAKKA BHARGAVI LAKSHMI PRIYA, [5]B. BHAGYA LAKSHMI

[1]Student, [2]Student, [3]Student, [4]Student, [5]Assistant Professor
Department of Computer Science and Engineering
Ideal Institute Of Technology, Vidyut Nagar, Kakinada-533005, Andhra Pradesh, India

Abstract: The Attendance Management System (AMS) revolutionizes student attendance recording by using a robust database to store student profiles and hourly attendance. It tracks class-specific details, including mids, sems, dates, and days. AMS features distinct portals for faculty, management, and students: faculty can mark attendance and manage schedules; management can access analytics and administrative tools; students can view their records. This system offers faster, error-free management with less paperwork. Developed using JavaScript for its versatility and database management libraries, AMS streamlines attendance tracking and enhances efficiency and transparency in educational institutions, benefiting both academic and administrative staff.

Furthermore, the Attendance management system seamlessly integrates with student information databases, ensuring that all pertinent details are accurately reflected on the portal. This innovative feature facilitates swift information retrieval and enhances security measures for both administration and students, making it a valuable asset for institutions seeking to optimize their attendance tracking process.

I. INTRODUCTION

The Hourly Attendance Management System is a digital solution designed to revolutionize student attendance recording in educational institutions. Leveraging a sophisticated database, the system meticulously stores detailed student profiles and hourly attendance records, including class schedules, dates, and days attended. User-friendly interfaces for faculty, management, and students streamline attendance tracking and provide convenient access to records. Using JavaScript for versatility and SQL for efficient database management, the system ensures robust functionality and reliability. It simplifies attendance management, enhances organizational efficiency, and promotes transparency.

Addressing traditional attendance recording challenges, the system reduces manual efforts, minimizes errors, and saves resources. Teachers can intuitively mark attendance and manage schedules, management can access comprehensive analytics to monitor trends and resource allocation, and students can review their attendance history. This project aims to deliver a user-friendly, robust solution that improves attendance tracking processes, fosters organizational efficiency, and promotes transparency in educational settings.

II. Literature review

- **Traditional Manual Attendance Tracking Method:**

. Paper-based attendance tracking is inefficient and error-prone. Records can be easily damaged, lost, or misplaced, especially in busy academic environments. Retrieving specific data is time-consuming, causing delays. Scalability is limited, making it hard to adapt to large classes or changing needs. Additionally, remote access and real-time monitoring are hindered, affecting collaboration among instructors and administrators.

- **Excel sheets for storing information**

Manual data entry of attendance records into Excel sheets risks significant human error, including typos and omissions. These errors can affect the reliability of records and skew semester and mid-term attendance percentages. Additionally, manually calculating these percentages increases the likelihood of mistakes, leading to inaccurate assessments of student attendance. An automated system would mitigate these issues, ensuring accurate and efficient attendance tracking.

- **Early stage the Attendance system**

In the initial stage marking attendance has been done once a day, which can lead to inaccuracies and misrepresentations of a student's attendance. Hourly tracking provides a more accurate picture, capturing partial absences due to valid reasons and monitoring punctuality and engagement. It enables educators to identify and address patterns of tardiness or early departures, fostering accountability and responsibility among students.

- **Hourly tracking systems**

In the late 20th century, detailed hourly data enhances analysis and decision-making, allowing targeted interventions to improve attendance and academic outcomes. Neglecting hourly tracking overlooks valuable opportunities to support student success and create a positive learning environment. Hourly tracking systems also help the management to find out the particular students attending a particular class and calculate their attendance respectively.

III. Existing System

The current paper-based method of tracking student attendance, with records stored in Excel sheets, faces significant challenges in efficiency and accuracy. Issues like loss, damage, and illegible handwriting compromise record reliability, while manual data transfer introduces errors, affecting attendance calculations. Consequently, educators struggle to monitor trends, identify patterns, and assess student performance accurately.

Transitioning to digital attendance solutions addresses these limitations by automating processes, streamlining data management, and enhancing accuracy. Digital systems eliminate paper-based issues and offer features like real-time reporting, customizable reports, and seamless integration with student information systems, providing a comprehensive and efficient attendance tracking solution.

Disadvantages:

- Filing the information in a hard copy document is quite a tedious and strenuous process. It is difficult to maintain historical data.
- Space is a very big problem while using the hard copy. If a mistake is made, it can result in the loss of one, two, or even multiple pages.

IV. Proposed system

The proposed PHP system overcomes existing drawbacks by simplifying the attendance process. Teachers can easily post attendance, and students can view it once posted. Faculty can mark attendance, and admins can download records in Excel format with specific date constraints. Administrators can make departmental changes but cannot access other departments' data. Super Administrators have broader control, including class creation, student management, and portfolio updates. This efficient model saves time and addresses the limitations of the current system.

Advantages:

- **Variety of Records Complexity**: Reduced need of maintenance of records.
- **Time Saving**: Less consumption of time for posting and evaluating the attendance.
- **Automatic Attendance Generation**: The server automatically marks attendance once it's marked in the portal.
- **Anywhere, Anytime Access**: Administrators, students can use this from anywhere in the world, at any time.

Technology Stack

- **Front-End**: Developed using HTML and CSS for the user interface.
- **Back-End**: Utilizes MySQL, PHP, and JavaScript for database management and server-side processing.
- **Compatibility**: Runs on Windows environments such as Win9x, NT, and Windows 10,11.
- **User Access**: Accessible via web browsers, making it easy for users to interact with the system.

Technical Feasibility

- **Availability**: All required hardware and software components are readily available in the market.
- **User-Friendly**: The system is fully GUI-based, ensuring ease of use. Inputs are designed to be self-explanatory, even for non-technical users.
- **Training**: Proper training sessions have been conducted to familiarize users with the system, ensuring they feel comfortable using it.

Operational Feasibility

- **Time-Saving**: The system saves significant time for students by letting them access their report from anywhere an at any time.
- **Convenience**: Services can be accessed by faculty at their workplace, enhancing convenience.
- **Cost-Effective**: The cost of implementing the system is minimal compared to the benefits. The initial investment covers the necessary hardware and software, with no need for further enhancements.

Economic Feasibility

- **Low Initial Investment**: The system's initial cost is the primary expense, with readily available and affordable hardware and software.
- **Cost-Benefit Ratio**: The benefits, such as time savings and improved service efficiency, far outweigh the initial costs, making the system economically feasible.

The proposed system for attendance management is technically, operationally, and economically feasible. It leverages commonly available technologies and provides a user-friendly, cost-effective solution for managing the attendance including storage and quick report accessing tool. This system enhances efficiency and convenience for both administrators and users.

v. Implementation

Installing XAMPP:

XAMPP, which stands for Cross-Platform (X), Apache (A), MySQL (M), PHP (P), and Perl (P), is a simple and lightweight Apache distribution designed to facilitate developers in creating a local web server for testing purposes. It includes everything necessary to set up a web server—namely the server application (Apache), database (MySQL), and scripting languages (PHP and Perl)—all packaged in a single, easily extractable file. XAMPP's cross-platform capability ensures it works seamlessly on Linux, Mac, and Windows.

Given that most actual web server deployments use the same components as XAMPP, transitioning from a local test server to a live server is remarkably straightforward.

Step 1: Disable your anti-virus as it can cause some XAMPP components to behave erratically.

Step 2: Disable User Account Control (UAC). UAC limits write permissions to XAMPP's default installation directory (c:/Program Files/xampp), forcing you to install in a separate directory. You can learn how to disable UAC here. (Optional)

Step 3: Start the installation process by double-clicking on the XAMPP installer. Click 'Next' after the splash screen

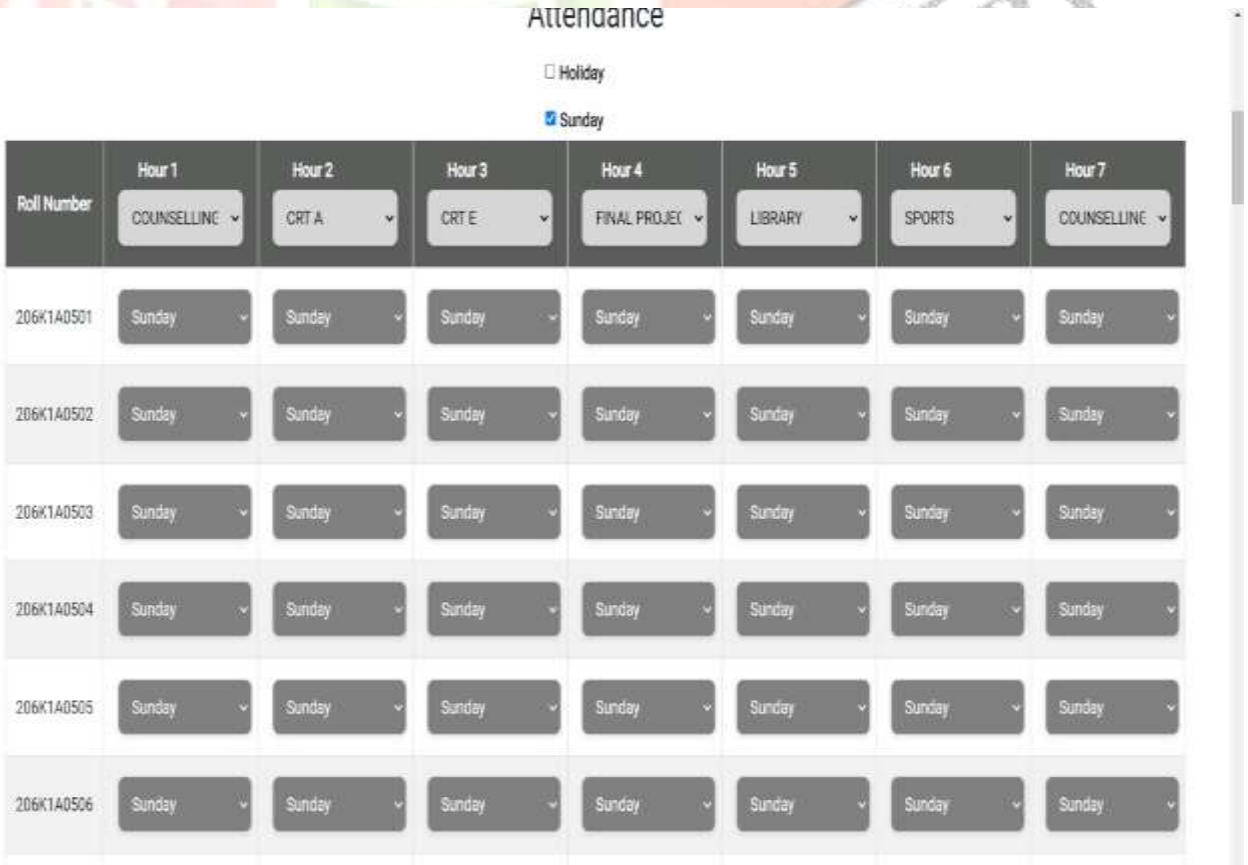
Step 4: Here, you can select the components you want to install. Choose the default selection and click 'Next'.

Step 5: Choose the folder you want to install XAMPP in. This folder will hold all your web application files, so make sure to select a drive that has plenty of space.

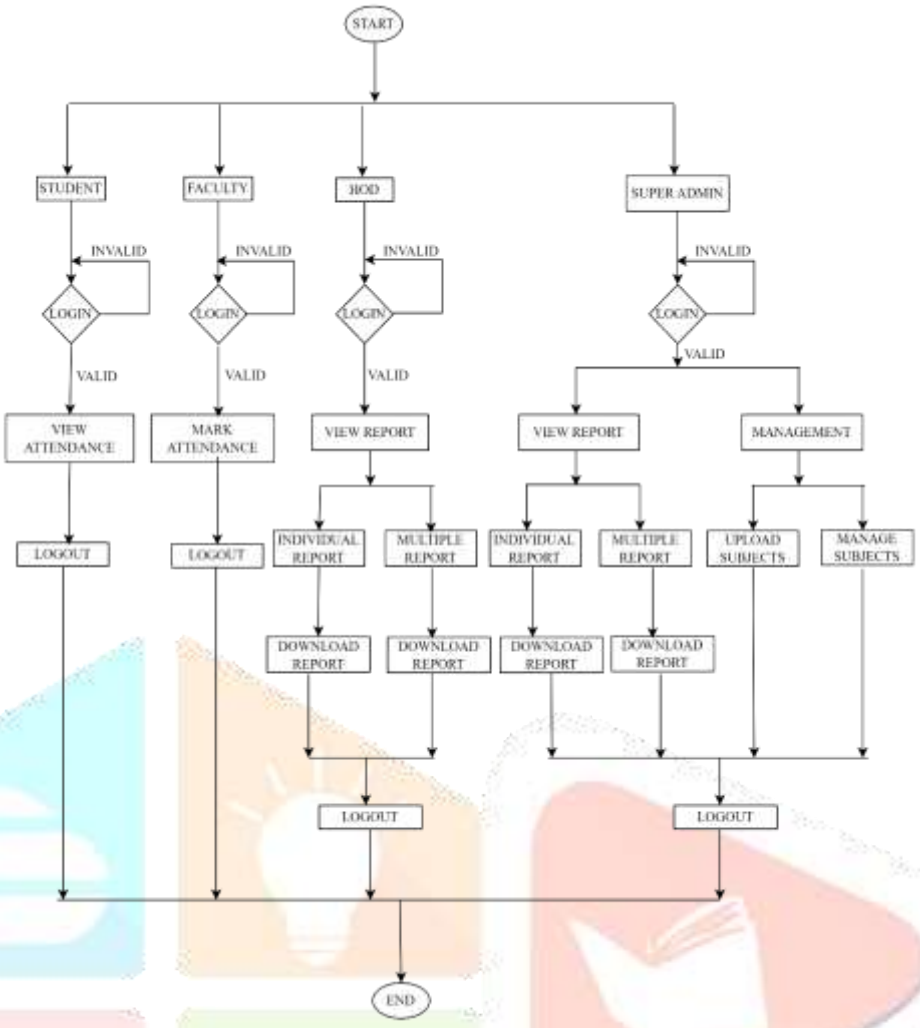
VI. Modules of the project

- ❖ After Super Admin Login
  - ➢ View reports.
  - ➢ Add new subjects.
  - ➢ Manage students.
- ❖ After Hod Login
  - ➢ View Individual report of the student.
  - ➢ View Multiple reports of the students.

- ❖ After Faculty Login
  - ➢ Mark the attendance.
- ❖ After Student Login
  - ➢ View Attendance.



VII. Flowchart



VIII. Conclusion:

The Hourly Attendance Management System is a groundbreaking advancement in educational attendance tracking. Leveraging digital technology, it offers a comprehensive solution to traditional attendance methods. Its sophisticated database ensures meticulous tracking of student attendance, capturing detailed class schedules and attendance dates, enhancing accuracy and providing valuable insights for administrators. The user-friendly interfaces for faculty, management, and students promote ease of use and accessibility, reducing manual effort and errors. Faculty benefit from intuitive attendance marking tools, management accesses comprehensive analytics for informed decisions, and students have transparent access to their records. Utilizing JavaScript and SQL Alchemy, the system is robust, efficient, and scalable, representing a transformative shift towards streamlined attendance management and organizational efficiency.

IX. Future Scope:

The Scope of this project is very broad in terms of gaining knowledge and sharing knowledge among the world. Main future scope of the project is:

- **Integration of Biometric Systems:** Implementing biometric authentication can enhance security and accuracy in attendance tracking. Integrating biometric scanners or facial recognition technology can automate the process of marking attendance and minimize the chances of proxy attendance.
- **Machine learning for predictive analysis:** Incorporating machine learning algorithms can analyze historical attendance data to predict future attendance patterns. This can help identify students at risk of falling below the 75% attendance threshold, enabling proactive interventions such as targeted notifications or counseling

sessions to improve attendance.

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2. PHP and MySQL Web Development" by Luke Welling and Laura Thomson.
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