

SMART INDIA HACKATHON - ROUND 1

Problem Statement Id : SIH25012

Problem Statement Title : Automated Student Attendance Monitoring and Analytics System for Colleges.

Theme : Smart Education

PS-Category : Software

Description:

Automating student attendance maximises instructional time by freeing faculty from the tedious and time-consuming task of manually taking attendance, allowing them to focus more on teaching. It eliminates attendance fraud and human errors, ensuring that attendance records are accurate, reliable, and trustworthy. The system empowers educators by providing valuable insights that help identify students who may be disengaged or at academic risk, enabling timely support and intervention. Additionally, it promotes transparency and accountability among students, faculty, and parents through real-time attendance tracking and visibility. Finally, this system accelerates the digital transformation of educational institutions, aligning them with modern, efficient, and data-driven academic practices that enhance overall institutional effectiveness and student outcomes.

Introduction

This project is a secure attendance management system designed to streamline attendance marking for students and admins, featuring role-based authentication and a user-friendly interface.

Features

- Role-based access (Student/Admin)
- Secure login with password hashing for students
- Real-time attendance marking and management
- Admin dashboard with detailed reports
- QR Code Scanner to move to the Attendance Marking Page.
- Visually impactful pie chart to Showcase Attendance for every day (changing).
- Easily accessible CSV file to download the attendance.

Technologies Used

- PHP 8.x
- MySQL 8.x
- HTML5, CSS3, JavaScript
- XAMPP (for local development)

Installation

Go to the website link <https://www.apachefriends.org/index.html> to download the XAMPP Server on your computer. Follow the steps prompted to correctly install the application.



Usage

Instructions to run and use the project.

- Open your web browser and navigate to 'http://localhost/SIH/QR_HTMLJS.php'.
- Select your role (Student/Admin).
- Students can mark attendance by entering username, password and roll number.
- Admins must login with actual username and password to access the dashboard (official@admin, 1432).

Database Schema

Overview of main database tables and fields.

Table	Description
users	Stores user information: id, role, username, password, rollno
attendance	Stores attendance data linked to users and timestamps

Users:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	id 🔑	int			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 2	role	enum('student', 'admin')	utf8mb4_0900_ai_ci		No	None			Change Drop More
<input type="checkbox"/> 3	username 🗑️	varchar(50)	utf8mb4_0900_ai_ci		No	None			Change Drop More
<input type="checkbox"/> 4	password	varchar(255)	utf8mb4_0900_ai_ci		No	None			Change Drop More
<input type="checkbox"/> 5	rollno	varchar(20)	utf8mb4_0900_ai_ci		Yes	NULL			Change Drop More

Attendance:

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
<input type="checkbox"/> 1	id 🔑	int			No	None		AUTO_INCREMENT	Change Drop More
<input type="checkbox"/> 2	user_id 🗑️	int			No	None			Change Drop More
<input type="checkbox"/> 3	Date	date			No	None			Change Drop More
<input type="checkbox"/> 4	Status	varchar(50)	utf8mb4_0900_ai_ci		No	None			Change Drop More

Testing

Problems we faced while testing:

- Adding the QR Code Scanner using JavaScript effectively.
- Making sure the attendance of students actually gets stored in the table.
- Allowing only the faculty with admin credentials to view the dashboard to avoid student misuse of the switch roles option.
- Ensuring the data stored in the table is visually displayed correctly through the Pie chart.
- Creating an option for the admin to download the attendance by getting the records from the table.

Known Issues

- Admin passwords are currently stored in plain text (consider hashing for security)
- Roll number input validation can be improved

- Mobile UI tweaks needed for smaller screens
- Add the ability to change profile settings and FAQ's in the Dashboard for effective use.