

TRACK MY CLASS

Mini Project Report by

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TRACK MY CLASS

“Streamlining your Class Queries”

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ABSTRACT

"Track My Class" is a Student Database Management System (SDMS) developed using **Flask**, a lightweight **Python** web framework, and **MySQL**, a robust relational database management system. This system is designed to manage and streamline various aspects of student and academic information, including student profiles, class schedules, attendance tracking, and grade management. The system allows Faculties to register, view and update their personal details, enroll in courses, and track their academic performance in real-time. Faculty members can efficiently manage course schedules, mark student attendance, input grades, and generate performance reports. The use of Flask ensures a lightweight and scalable web application, while MySQL provides a reliable backend for securely storing and retrieving student data. With its user-friendly interface, **"Track My Class"** offers easy access to important academic information, reduces administrative workload, and improves data accuracy and communication between students, faculty, and administrators. The system's real-time updates and secure data handling make it a modern, efficient solution for managing student records and enhancing the overall educational experience.

The use of Flask allows for the development of a lightweight web application that is both fast and easy to maintain, ensuring quick response times and an intuitive user interface. Meanwhile, MySQL serves as the backend database, offering reliable data storage, complex querying capabilities, and secure data management. With features like real-time updates, automated attendance tracking, and grade management, the system reduces administrative workload, minimizes the chances of errors, and enhances communication.

"Track My Class" is also designed with a strong emphasis on data security, ensuring that sensitive student information is safely stored and accessible only to authorized users. Additionally, the system includes various reporting tools for administrators, enabling them to generate detailed reports on attendance, grades, and student performance. This project not only automates many tedious administrative tasks but also provides a user-friendly and efficient way for educational institutions to manage their student data, fostering a more organized, transparent, and productive academic environment. Through its use of modern technologies like Flask and MySQL, "Track My Class" serves as an innovative solution to the evolving needs of educational institutions in the digital age.

REQUIREMENTS

Software Requirements:

Operating System	Windows 11 Pro
Front End	HTML, CSS, JavaScript ,Bootstrap
Back End	Python
Program	Python
IDE	PyCharm
Framework	Flask
Database	MySQL
Server	Local Server
System type	64-bit operating system

Hardware Requirements:

System	PC/Laptop
Processor	Intel Core i3 / Intel Core i7
RAM	8.00 GB / 16.00 GB
Hard disk	SSD
Keyboard	Standard USB keyboard
Mouse	USB mouse, Track pad
Speaker	Hight -quality speaker
Graphics card	NVIDIA GeForce GTX 1660

INTRODUCTION

About the Project

Project Title: “Track My Class”, A Web-Based Student Database Management System Using Flask and MySQL.

"Track My Class" is a comprehensive Student Database Management System (SDMS) designed to manage and streamline key aspects of academic administration for educational institutions. Developed using Flask, a lightweight Python web framework, and MySQL, a powerful relational database, this system serves as an efficient tool for managing student information, class schedules, grades, and attendance. The project aims to automate and simplify administrative tasks, reducing the burden on staff while improving the accuracy and accessibility of student data.

The system enables students to create and manage personal profiles, view their academic records, enroll in courses, track attendance, and access real-time updates on grades and assignments. Faculty members can efficiently manage class schedules, mark attendance, input grades, and generate performance reports, all from a single platform. Administrators can access comprehensive data, including student records and performance analytics, through advanced reporting features.

Key functionalities include:

Student Profile Management: Students can register, update personal information, and manage academic records.

Course Enrollment: Students can browse and enroll in courses, while instructors can manage course schedules and student rosters.

Attendance Tracking: Faculty can mark attendance and monitor student participation.

Grade Management: Teachers can input and update grades for exams, assignments, and coursework.

Reporting and Analytics: Administrators and faculty can generate reports on student performance, attendance, and course enrollment.

Data Security and Access Control: Secure user authentication ensures that only authorized individuals can access sensitive student data.

The system's design leverages the simplicity and flexibility of Flask for the frontend and backend integration, while MySQL handles efficient and secure data storage. With real-time updates and a user-friendly interface, "Track My Class" offers a scalable, secure, and responsive solution that enhances communication and transparency between students, faculty, and administrators. By automating routine administrative tasks, this project not only simplifies data management but also contributes to better educational outcomes through more effective tracking of academic progress.

About the Takshashila University

Takshashila University was established with the vision to recreate the glory of the ancient Takshashila, India's oldest university of higher learning. Located in Ongur, Tamil Nadu, the university is part of the prestigious Sri Manakula Vinayagar and Mailam Group of Institutions, with over 25 years of experience providing quality education. Takshashila University aims to promote academic excellence through rigorous programs taught by eminent faculty and innovative teaching methods like hands-on learning and research.

Institutional Mission: The mission of "Track My Class" is to revolutionize academic administration by providing an efficient, secure, and user-friendly platform that empowers educational institutions to manage student information, attendance, grades, and course schedules with ease and accuracy. Our system aims to reduce administrative overhead, increase transparency, and enhance communication between students, faculty, and administrators, thereby fostering an environment of academic excellence. The platform's robust features ensure that educational institutions can manage student data efficiently while upholding the highest standards of data security and privacy.

Vision: By leveraging cutting-edge technologies such as Flask and MySQL, our vision is to create a dynamic system that evolves with the needs of the education sector, offering scalable, adaptable, and innovative features that simplify administrative tasks and improve the student experience. "Track My Class" aspires to set a new standard for how institutions handle academic records, attendance tracking, grades, and course management, promoting greater transparency, accuracy, and accessibility.

Existing System

The existing systems for managing student data in educational institutions are typically either manual or involve the use of multiple disconnected software applications. These traditional methods often lead to inefficiencies, inaccuracies, and difficulties in communication between students, faculty, and administrators. Here's a breakdown of the current practices and challenges faced by institutions:

1. Manual Record Keeping:

In many educational institutions, student data is still managed using paper records or spreadsheets. This method is prone to human errors, data loss, and inefficiencies, especially when it comes to retrieving or updating student information. Handling large volumes of data manually can be time-consuming and error-prone, which increases the administrative burden.

2. Disjointed Software Solutions:

Some institutions use a variety of software tools for different purposes, such as Excel for grades, separate systems for attendance tracking, and other tools for course scheduling. These systems rarely integrate, leading to issues like inconsistent data, data duplication, or confusion about which software holds the most up-to-date information. Faculty and administrators often need to work across multiple platforms to manage student records, which creates inefficiency and increases the chances of errors.

3. Limited Access and Security:

Many existing systems lack proper security measures, leaving sensitive student data vulnerable to unauthorized access or misuse. Furthermore, access to student data is often limited to specific departments or individuals, creating communication barriers between students, teachers, and administrators. The lack of real-time data access also limits the ability to monitor student performance or attendance consistently.

4. Lack of Real-Time Updates:

Most current systems do not offer real-time updates on academic progress or attendance. Students and faculty members may have to wait for periodic updates or reports, resulting in delays in academic decision-making and feedback. This lack of immediacy can lead to issues like students falling behind without timely interventions.

5. Difficulty in Reporting and Analytics:

Generating reports on student performance, attendance, and course enrollment is a complex and time-consuming task in many institutions. Administrators often have to manually compile data from various sources and tools, which can be errorprone and inefficient. Existing systems may not offer advanced reporting tools, making it difficult for faculty and administrators to generate customized or comprehensive performance reports.

Proposed System

Introduction:

The proposed system, "Track My Class", is a web-based student database management system designed to streamline the tracking of student information, attendance, grades, and course enrollment. Developed using Flask as the backend framework and MySQL as the database, the system will allow students, teachers, and administrators to interact with the data efficiently. Key features include student registration, profile management, course creation, attendance tracking, grade management, and student performance dashboards. The system will support rolebased access control, with admins having full control over user and course management, teachers managing their own courses, and students accessing their personal data and progress. The backend will utilize Flask-Login for secure user authentication and SQLAlchemy for database interaction. The system's frontend will be built with HTML, CSS, and JavaScript, ensuring a responsive and intuitive interface. The system will provide a centralized platform for managing academic records, improving organization and accessibility for educational institutions.

Key Features:

- **Student Registration:** New students can register with personal details such as name, roll number, email, phone number, and class details.
- **Student Profile Management:** Students can view and update their personal details and track their academic progress.
- **Course Management:** Teachers and administrators can create, update, and delete courses. Each course will have associated details like course name, instructor, and syllabus.

- **Attendance Tracking:** Administrators and teachers can track student attendance for each course, with options to mark attendance for individual classes.
- **Grade Management:** Teachers can assign grades and marks for each student in their respective courses.
- **Student Dashboard:** Students can view their overall progress, including grades, attendance, and upcoming assignments.
- **Search & Reporting:** Admins and teachers can search for students based on various criteria, like name, roll number, or course. Reports on student performance can be generated.
- **Login and Authentication:** The system will support different user roles (Admin, Teacher, Student), each with specific permissions. Admins will have full access to the system, while teachers can manage only their courses and students, and students can manage their profiles.

System Workflow

1. User Authentication:

- Users (Admin, Teacher, Student) will log in using their credentials. Flask-Login will manage user sessions and provide secure authentication.

2. Student Registration:

- Admins will add new students to the system via a registration form. The student's information will be stored in the `students` table.

3. Attendance Management:

- Teachers will mark attendance for each class session. The attendance data will be recorded in the `attendance` table and can be tracked by students and teachers.

User Roles and Permissions

- **Admin:** ◦ Full access to all features. ◦ Can manage students, courses, and users (teachers).
 - Can generate reports.
- **Teacher:**
 - Can manage their own courses (create/update/delete courses).
 - Can input grades and mark attendance for their students.
- **Student:**
 - Can view their profile, grades, and attendance. ◦ Can update personal information. ◦ Can view available courses and their own performance in each course.

Security Considerations

- **Password Encryption:** Passwords will be securely stored using hashing (e.g., using Flask-Bcrypt).
- **Role-based Access Control:** The system will implement role-based access control to ensure only authorized users can access certain functionalities.
- **SQL Injection Prevention:** All database queries will be parameterized to avoid SQL injection attacks.
- **Session Management:** User sessions will be securely managed to prevent unauthorized access.

Conclusion

The "Track My Class" system is a comprehensive solution for managing student information, attendance, and grades in a classroom or educational setting. Using Flask for the backend and MySQL for the database ensures that the system is scalable, secure, and efficient. This system provides a user-friendly interface for students, teachers, and administrators to interact with and manage academic data, helping to streamline educational administration and improve overall student tracking and performance monitoring.

MODULE

1.Navigation Bar (Header)

- ☐ Logo
- ☐ Home
- ☐ Student Management
- ☐ Course Management
- ☐ Enrollment
- ☐ Attendance
- ☐ Grade Management
- ☐ Fee Management
- ☐ Reports

2.Sidebar

- ☐ Quick Access Links
- ☐ Search Box.
- ☐ Recent Activities

3.Dashboard (Main Content Area)

- ☐ Overview/Statistics
- ☐ Graphical Charts
- ☐ Recent Activity
- ☐ Quick Actions

4. Student Management Section

- ☐ Add New Student Form
- ☐ Student List/View
- ☐ Search & Filter
- ☐ Edit/Delete Options

5.Attendance Section

- ☐ Mark Attendance
- ☐ View Attendance
- ☐ Track Absences

6. User Profile & Settings

- ☐ Update Profile
- ☐ Change Password
- ☐ Manage Roles & Permissions
- ☐ System Preferences

7. Footer Section

- ☐ Contact Information
- ☐ Privacy Policy & Terms of Use
- ☐ Help & Support
- ☐ Copyright Information

8.Login/Authentication Page (if applicable)

- ☐ Login Form
- ☐ Forgot Password
- ☐ Role-based Login

| Logo | Home | Dashboard | Student Management | Logout |

| Sidebar: Quick Links | Search | Notifications |

| Main Content Area: |

| - Dashboard Overview (Graphs, Stats) |

| - Quick Actions (Add Student, View Attendance, etc.) |

| Footer: Contact Info | Privacy Policy | Support |
