Inspiring Excellence

CSE370 : Database Systems

Project Report

Project Title : TRAFFIC REPORT SYSTEM

Group No : 12__, CSE370 Lab Section :19 __, Fall 2025		
ID	**Name**	**Contribution**
22301013	Hrithik Dev	Contributed 50% to the frontend by developing the authentication interface and role-based dashboard, and to the backend by implementing user authentication, session handlingdatabase operations,and access control logic.
2201693	Ramisha Hossain	Contributed 50% to the frontend by designing the vehicle management interface and maintaining UI consistency, and to the backend by handling database operations and access control logic.

Table of Contents

Introduction

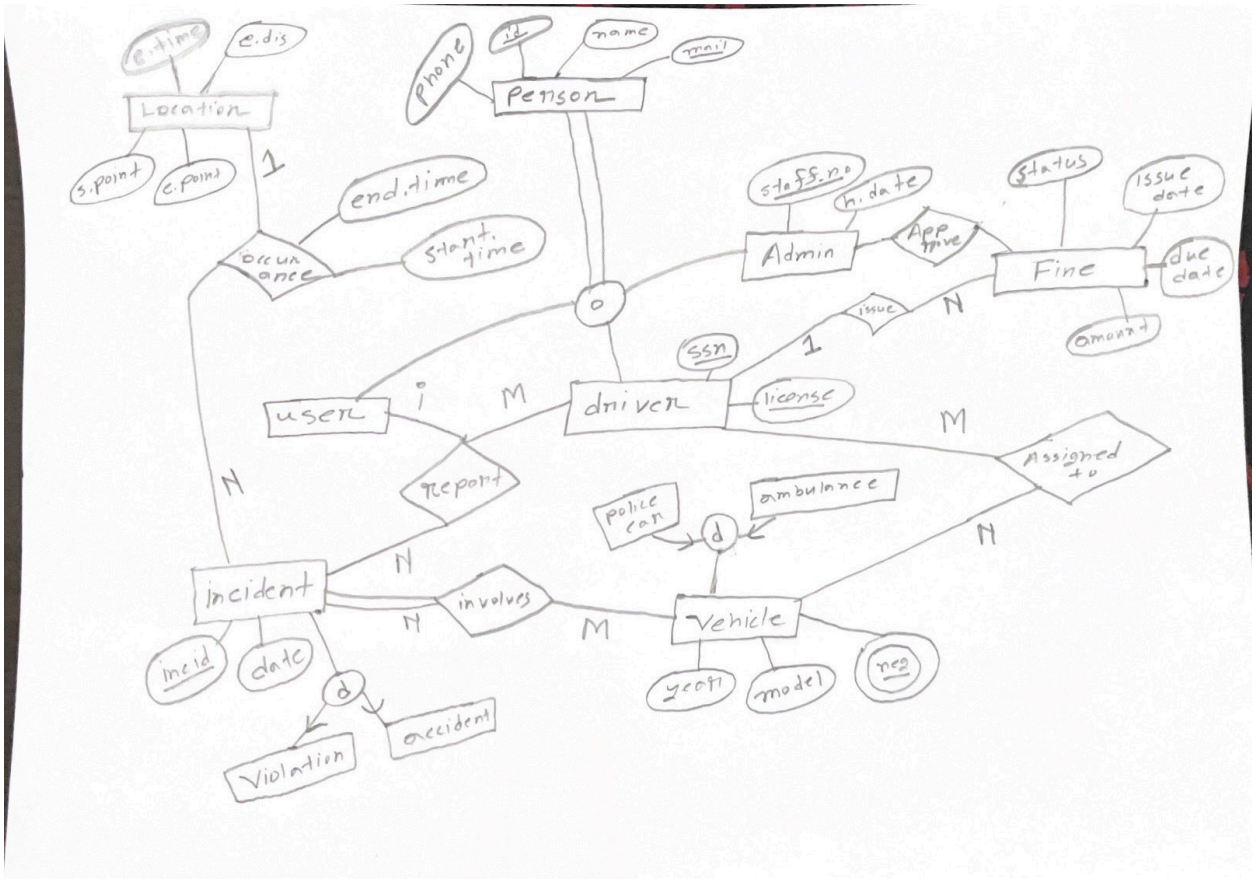
[Briefly describe the idea of your project]

This is a Traffic Management System - a web-based application designed to help manage traffic-related activities in a city or region. Think of it as a digital platform that connects police officers, drivers, and citizens to handle traffic incidents, violations, and vehicle management more efficiently.

Project Features

ID, Name	Features [3 per member]	
22201693, Ramisha hossain	Ft 1	Incident Desk (Report incident)
	Ft 2	Incident Explorer
	Ft 3	Fine Ledger
22301013, Hrithik Dev	Ft 1	-Profile management with roles based access
	Ft 2	-Location (start to end)
	Ft 3	-Vehicle and driver database
none	Ft 1	
	Ft 2	
	Ft 3	

EER Diagram


e.time
e.dis
Location
s.point
e.point
1
end.time
start.time
occurance
Phone
id
name
mail
Person
staff.no
h.date
Admin
Approve
status
issue date
Fine
due date
amount
issue
N
1
o
ssn
user
i
M
driver
license
M
Assigned to
N
report
police car
ambulance
d
N
incident
N
involves
M
Vehicle
N
incid
date
d
accident
Violation
year
model
reg

Schema Diagram

Normalization

Explain if your converted Schema is in 1NF or not. If not, decompose it to 1NF.
Explain if your converted Schema is in 2NF or not. If not, decompose it to 2NF.
Can there be any partial functional dependencies in your relational schema?

Explain if your converted Schema is in 3NF or not. If not, decompose it to 3NF.
Can there be any transitive dependencies in your relational schema?

a. It's not; if we wanted to decompose it to 1NF, we have to separate repeating attributes (like P_phone, D_phone, etc.) into new tables that store one value per record.
Ensure that each table only stores atomic values and that each record is uniquely identifiable. Avoid multi-valued attributes in any table, ensuring that repeating values (like multiple phone numbers, multiple incidents, etc.) are handled by creating additional tables for them.
B. The schema is mostly in 2NF. However, the USER_PHONE and DRIVER_PHONE tables had partial dependencies because the phone numbers depended only on P_ID and D_ID, not the entire composite key. These tables were decomposed to remove the partial dependencies, making them conform to 2NF. After the decomposition, all tables are in 2NF, with no partial dependencies.
C. The schema is mostly in 3NF, but the FINE table has a transitive dependency. Specifically, the F_STATUS attribute depends on P_ID through the F_ID primary key, which creates an indirect dependency. To resolve this, we need to decompose the FINE table into two separate tables: one to store the fine details (such as F_ISSUE_DATE, F_DUE_DATE, F_AMOUNT, and P_ID) and another to store the fine status (F_STATUS) related to P_ID. By doing this, we eliminate the transitive dependency, ensuring that the schema fully conforms to 3NF, where all non-prime attributes depend only on the primary key, and there are no indirect dependencies.

Frontend Development

Briefly discuss about Backend Development and add relevant Screenshots (if required) by mentioning Individual Contributions

The frontend of the **Traffic Management System** is developed using **HTML5, CSS3, and JavaScript**, with an emphasis on modern UI design, responsive layouts, and role-based user interaction. The interface is designed to be intuitive and visually consistent across devices, ensuring smooth navigation for administrators, traffic police, and general users. Mobile-first design principles and accessibility considerations are followed throughout the system.

Contribution of ID : 22301013, Name : Hrithik

Hrithik contributed to the authentication and dashboard-related frontend components of the system. He worked on the `index.php` login interface, implementing a clean card-based layout with gradient backgrounds and demo account options to support testing. He also assisted in structuring the `register.php` page, focusing on interactive role selection and client-side form validation to improve user experience.

In addition, Hrithik developed the core dashboard (`dashboard.php`), designing a role-specific interface with clickable statistic cards and contextual action buttons. He used CSS Grid and Flexbox to maintain proper visual hierarchy and ensure the dashboard adapts well to different screen sizes while efficiently using available space.

Contribution of ID : 22201693, Name : Ramisha

Ramisha worked on the vehicle management interface and overall visual consistency of the frontend. She developed the `vehicles.php` page with responsive table layouts, inline form controls, and role-based CRUD interaction from the frontend perspective. Her work ensured that vehicle data is clearly presented and easy to manage across different devices.

Ramisha also contributed significantly to the styling and usability aspects of the system. She applied a consistent red-to-blue gradient color scheme (`linear-gradient(135deg,`

`#dc3545, #007bff`), integrated emoji-based icons for better visual communication, and added smooth hover animations. Accessibility features such as semantic HTML, keyboard navigation support, and consistent logout button placement across all pages were also maintained by her contributions.

Backend Development

Briefly discuss about Backend Development and add relevant Screenshots (if required) by mentioning Individual Contributions

The backend of the **Traffic Management System** is designed to support the core functionality of the application by managing server-side operations, database interactions, and user access control. It is developed using **PHP** and **MySQL**, which together handle user authentication, session management, and data processing. The backend ensures that users can only access features permitted by their roles, while securely managing traffic-related data such as user accounts and vehicle records. By separating backend logic from frontend presentation, the system remains organized, secure, and easier to maintain.

Contribution of ID : 22301013, Name : HRITHIK
Hrithik worked mainly on the authentication and session-handling part of the backend. He implemented the login and registration logic in PHP, where user credentials are checked against the database and appropriate feedback is provided for incorrect inputs. He also managed session-based access control to ensure that only logged-in users can view protected pages like the dashboard and vehicle management sections. In addition, Hrithik handled secure logout functionality by properly clearing session data, which helps prevent unauthorized access after a user exits the system. His contribution ensures that the system remains secure and that user access is handled smoothly.

Contribution of ID : 22201693, Name : RAMISHA
Ramisha focused on the **database and data management side** of the backend. She designed and handled MySQL queries for storing and retrieving user and vehicle information. Her work includes implementing backend CRUD operations for vehicle records and ensuring that these operations respect user roles and permissions.
Ramisha also paid attention to data validation and error handling so that incorrect or incomplete data does not break the system. Her contribution
helps maintain data consistency and reliability throughout the Traffic Management System.

Source Code Repository

https://github.com/samanthahere/Traffic-Management-System

Conclusion

The Traffic Management System represents a comprehensive, well-architected web application that successfully demonstrates modern web development principles through its cohesive integration of frontend and backend technologies, utilizing HTML5, CSS3, JavaScript, PHP 7.4+, and MySQL 5.7+ to create a robust platform for digitizing traffic law enforcement and incident management operations. The system's individual contributions span from sophisticated frontend implementations featuring responsive design patterns, role-based user interfaces, gradient-based visual aesthetics, and intuitive navigation systems, to comprehensive backend development encompassing secure authentication mechanisms, database normalization compliance, role-based access controls, and efficient data processing workflows that handle complex traffic management scenarios including incident reporting, fine administration, vehicle management, and location tracking. The application successfully addresses core user problems by providing traffic administrators, drivers, and general users with tailored interfaces and functionalities while maintaining security standards through password hashing, SQL injection prevention, and proper session management. The project exemplifies best practices in web development by implementing consistent code organization patterns, centralized configuration management, responsive mobile-first design principles, and accessibility considerations, ultimately delivering a scalable, maintainable, and user-friendly traffic management platform that effectively bridges the gap between traditional paper-based traffic enforcement processes and modern digital solutions, demonstrating the successful application of fundamental web technologies to solve real-world traffic management challenges while maintaining professional standards in both visual design and technical implementation.

References

1. PHP Official Documentation - PHP 7.4+ Features and Best Practices (https://www.php.net/docs.php)
2. MySQL 5.7+ Reference Manual - Database Design and Normalization Guidelines (https://dev.mysql.com/doc/)
3. HTML5 Specification - Semantic Markup and Accessibility Standards (https://html.spec.whatwg.org/)
4. CSS3 Standards - Responsive Design and Grid Layout Implementation (https://www.w3.org/Style/CSS/)
5. Bootstrap 5 Documentation - Component Framework and Responsive Utilities (https://getbootstrap.com/docs/)