Technical Documentation

COMP4039

Name: Wenyan Zhang

User Name: alywz44

Student ID:20559571

1. Introduction

This document provides technical details for the implementation, architecture, and deployment of the project. It is intended to guide developers in understanding the system and to support future maintenance or extension of the project.

2. Software Requirements

The project requires a web server, a database management system, and a PHP environment to function correctly.

3. Installation Guide

To deploy and run this project, follow these process:

3.1 Download the Project Files

Obtain the ZIP file containing the project directory from Moodle.

3.2 Unzip and Prepare Files

Extract the ZIP file to a working directory on the local machine.

3.3 Database Configuration

Open the db.inc.php file in the html/cw2 directory.

Update the database hostname, username, and password to match the MySQL/MariaDB setup.

3.4 Import the Database

Open a database management tool.

Import the cw2-database.sql file located in the mariadb directory.

3.5 Run Docker Environment
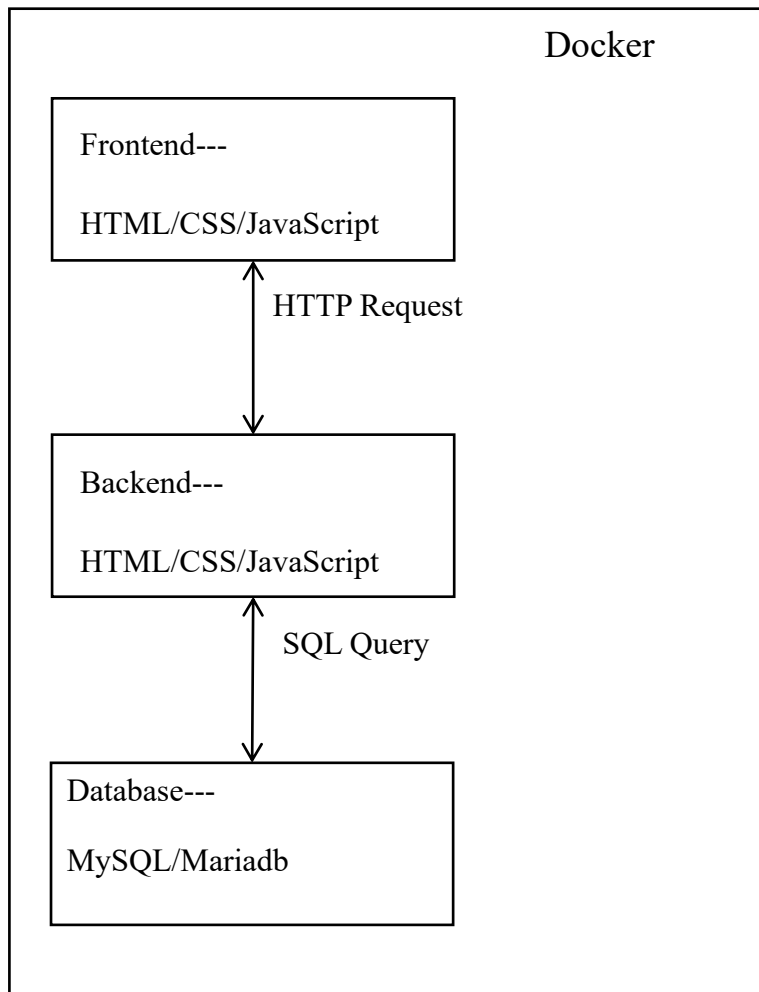
Navigate to the project root directory.

Execute docker-compose up to start the required services.

3.6 Access the Web Interface

Open your browser and navigate to localhost to use the application.

4. System Architecture

This diagram showing the system architecture, including frontend, backend, and database.

Components

- **Frontend**

    Technologies used (HTML, CSS, JavaScript).

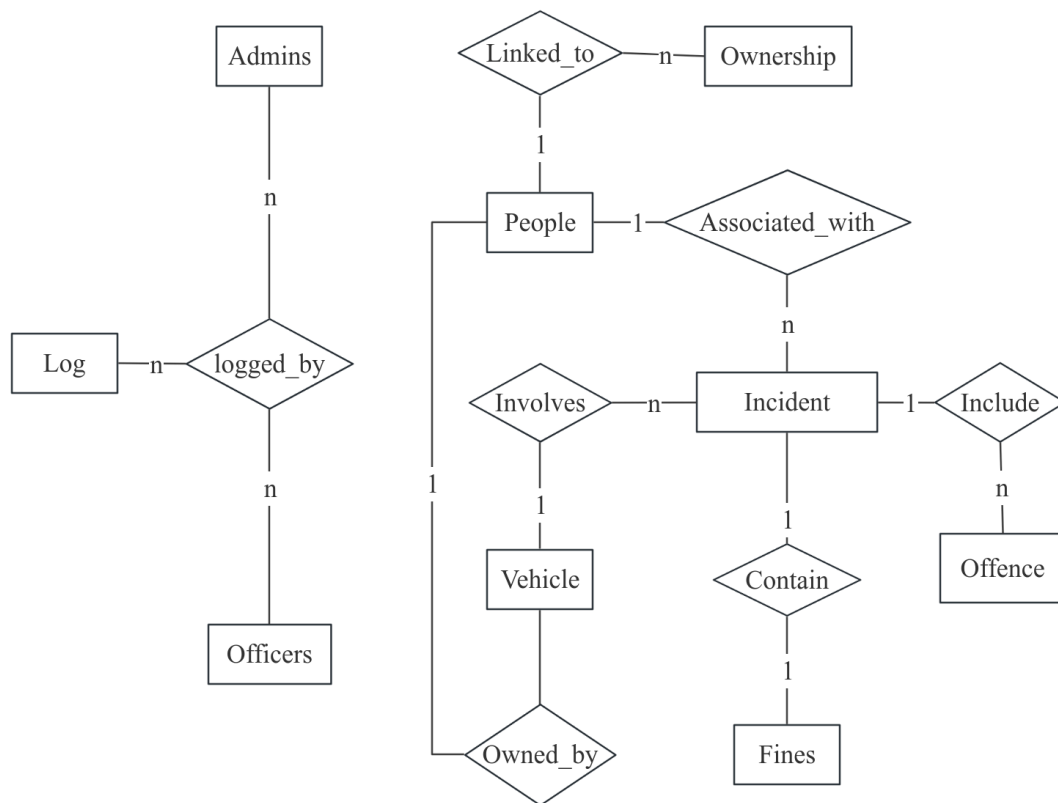- **Backend**

    Language: PHP with SQL queries.

- **Database**

    MySQL with tables for users, vehicles, and incidents.

5. Data Design

Entity-Relationship Diagram (ERD)

The ERD diagram to describe entities and their relationships, e.g., Users (Police, Admin), Vehicle Info, and Traffic Incidents.

6. Main Functions

6.1 Login

The system starts on the login page. On this page, the POST method is used to send the username and password to login.php. At this point, a connection to the database is established using the configuration from db.inc.php. If the username and password match the credentials stored in the admin database, the user is redirected to the index.php page.

6.2 Search People

The search content is sent to the findPeople.php page as a **GET** query. The search term is concatenated with an SQL statement to perform a database search. The results are

then displayed on the page.

6.3 Search Vehicle

The search content (vehicle license) is sent to the findVehicle.php page as a GET query. The search term is concatenated with an SQL statement to perform a database search, and the query results are displayed on the page.

6.4 Add Vehicle

The form data is sent to the addVehicle.php page, where the data is concatenated with an SQL statement and inserted into the database.

6.5 Report Incidents

The form data is sent to the addVehicle.php page, where the data is concatenated with an SQL statement and inserted into the database.

6.7 Search Incidents

The search content (incident ID) is sent to the searchIncident.php page as a GET query. The search term is concatenated with an SQL statement to perform a database search, and the query results are displayed on the page.

6.8 Create officer & Officer List

The form data is sent to the officerList.php page, where the data is concatenated with an SQL statement and inserted into the database. Finally, the officer list is displayed on the page.

6.9 Security Log

The logger.php page queries the database for all security logs from the logs table and displays the log records.

7. Design Rationale

The system is designed to prioritize usability and scalability, with modular components and clean code to facilitate future enhancements.

7.1 Database Design

The database schema follows normalization principles to eliminate redundancy and ensure data integrity.

7.2 Code Organization

PHP scripts are modular, with separate files for database connections, UI rendering, and business logic.

References:

https://github.com/subei12/Included-admins/blob/master/includes/db.class.php

https://github.com/tj-murphy/police-incident-management