



# **DBMS MiniProject**

# **TRAFFIC MONITORING SYSTEM**



Submitted by: Rishika Kinger  
SRN: PES1UG21CS489  
Class: 5-H

# INTRODUCTION

In the ever-growing urban landscape, managing and optimizing traffic flow is a critical aspect of ensuring public safety and efficient transportation. The Traffic Monitoring System (TMS) is an innovative solution designed to provide real-time insights into traffic conditions, empowering both citizens and law enforcement to contribute to the improvement of traffic management. This system features two distinct logins: one for citizens and police officers, and another for administrators, each with specific functionalities tailored to their roles.

## 1. Citizen and Police Officer Login:

### Citizen Access and Police Officer Access:

Citizens/ Police officers can use this login to access and add information. They can add vehicle and road data, view the number of cars and plan routes accordingly.

## 2. Admin Login:

The administrative login provides control over the system's core functionalities. Administrators can add new roads to the system, update road information, and manage user accounts. This access ensures the system remains dynamic and adapts to the changing traffic landscape. Additionally, administrators can generate reports based on traffic data, helping in decision-making for future infrastructure planning.

### Key Features:

**Traffic Monitoring:** The system provides live updates on number of vehicles, enabling users to make informed decisions regarding their routes.

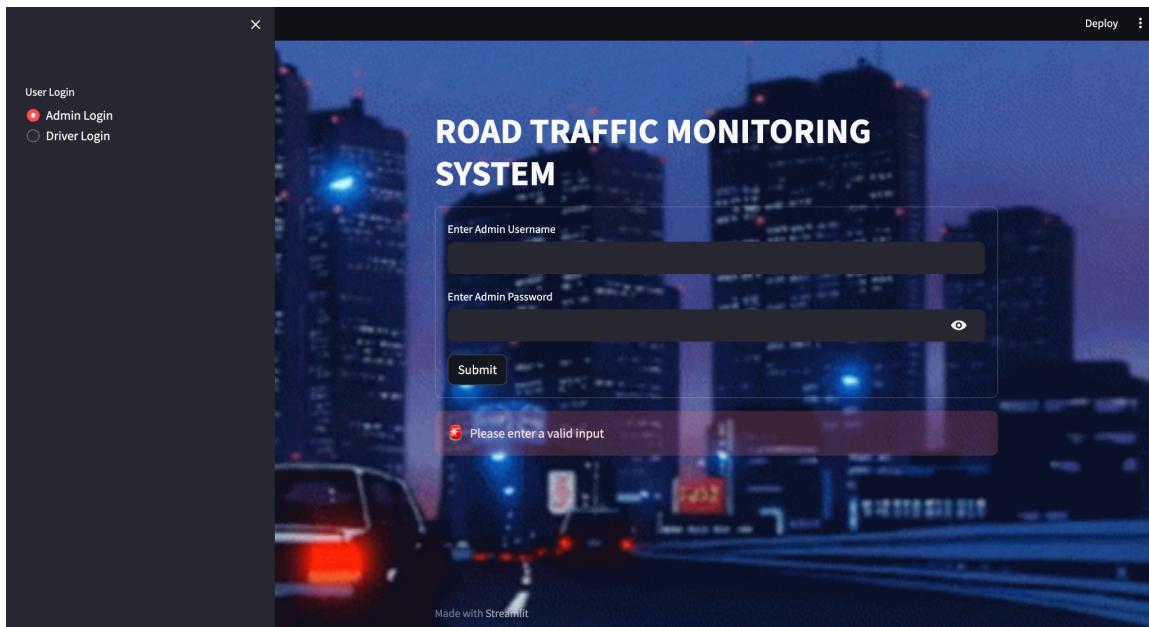
**Police Patrol Integration:** Police officers can update their patrol status, ensuring accurate information on roads patrolled and those requiring attention.

**Road Management:** Administrators can add new roads, update existing information, and ensure the system reflects the current state of the road network.

The Traffic Monitoring System aims to create a collaborative platform where citizens, law enforcement, and administrators work together to enhance traffic management and contribute to safer and more efficient transportation systems. This project can also be developed further to create a google maps like system, where data is manually entered.

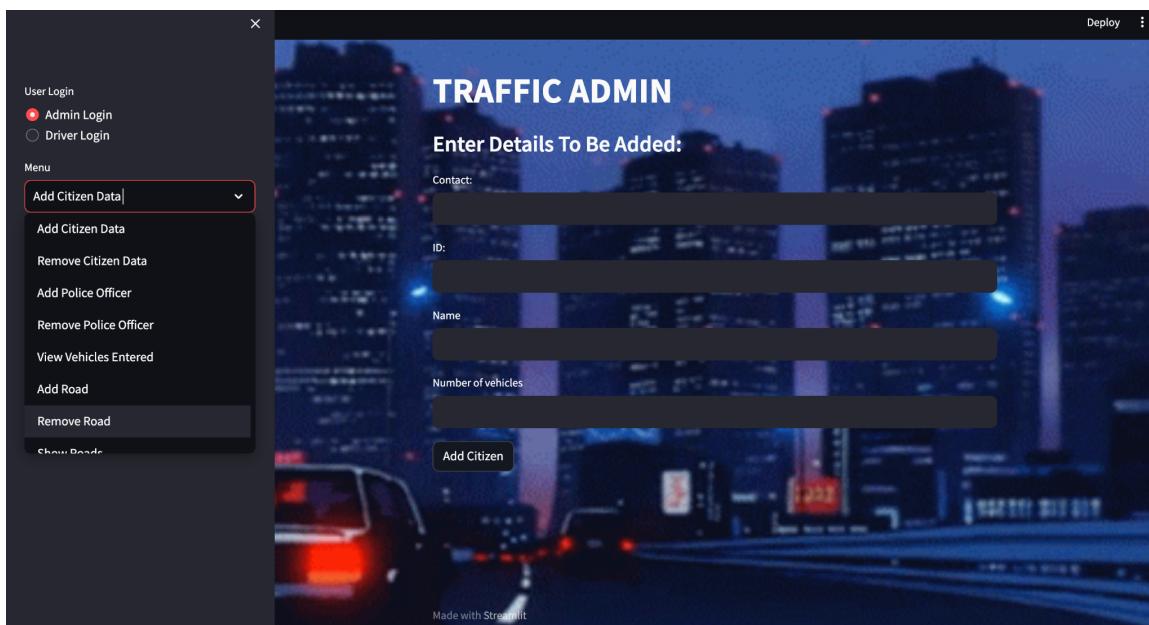
# SCREENSHOTS

## Login



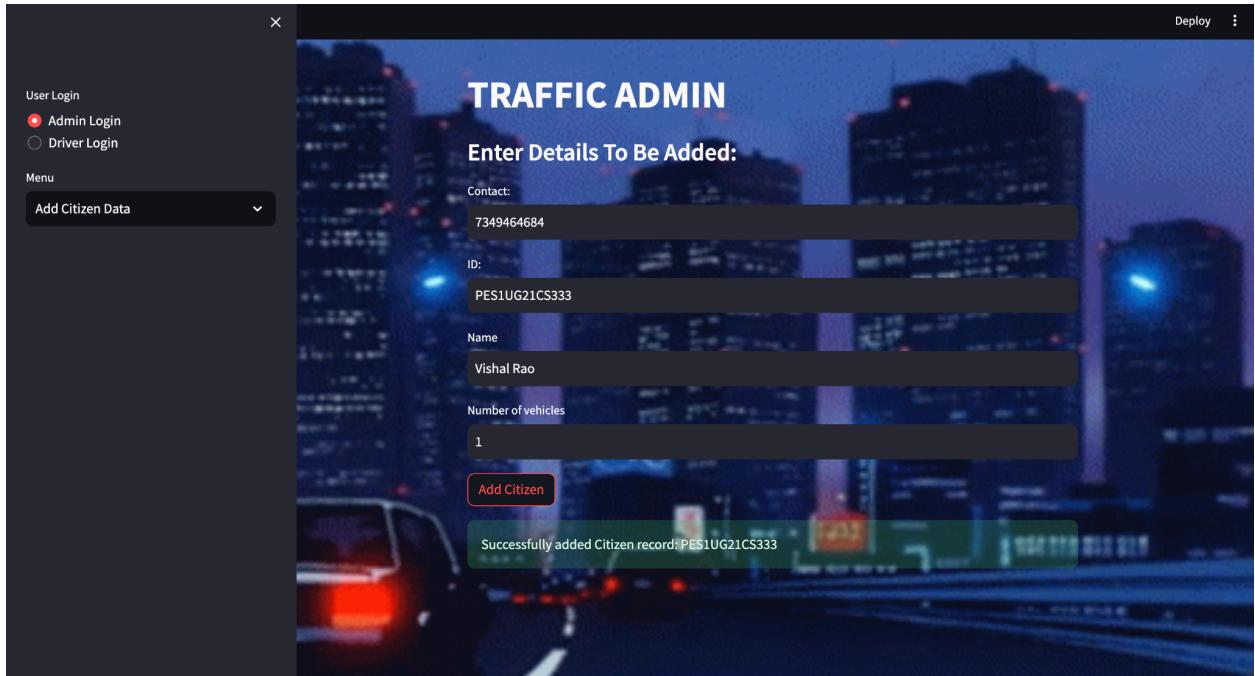
The login screen features a cityscape background at night with illuminated buildings and a car in the foreground. The title "ROAD TRAFFIC MONITORING SYSTEM" is centered above the login form. The form includes fields for "Enter Admin Username" and "Enter Admin Password", both with placeholder text. A "Submit" button is located below the password field. A red error message "Please enter a valid input" is displayed in a dark purple box. On the left, there's a sidebar with "User Login" and "Admin Login" (selected) or "Driver Login". On the right, there are "Deploy" and three-dot menu icons.

## Admin dashboard

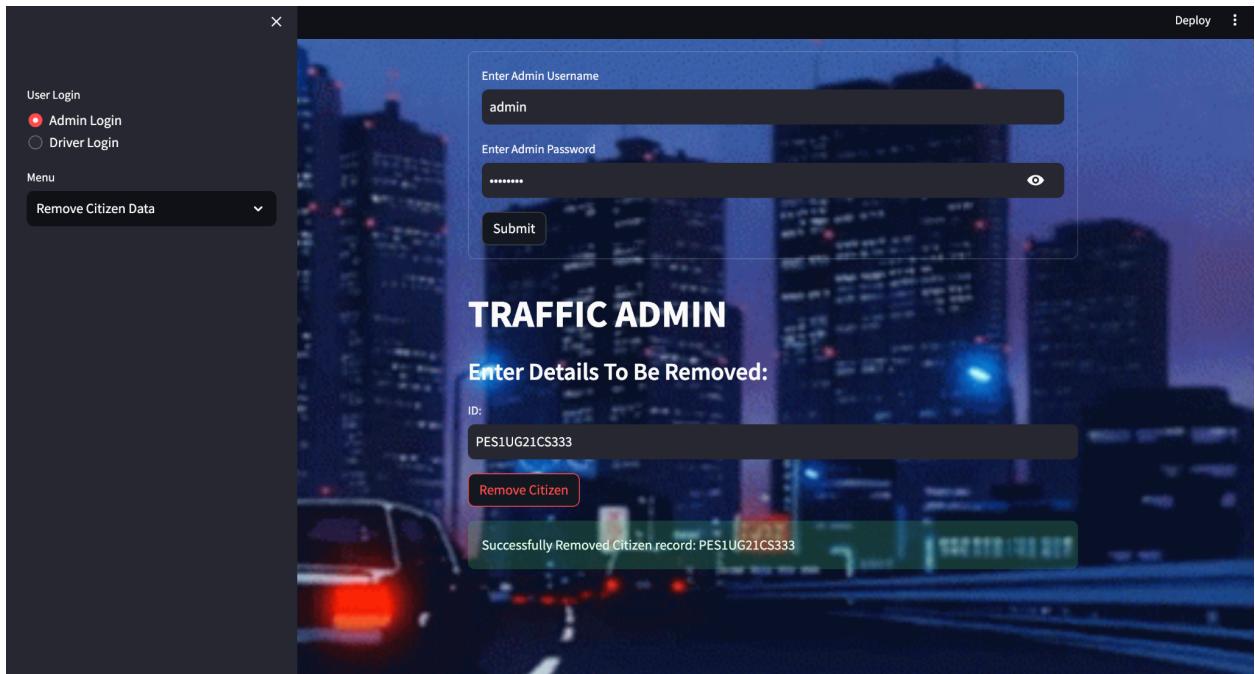


The admin dashboard has a cityscape background. The title "TRAFFIC ADMIN" is at the top, followed by "Enter Details To Be Added:". Below this are five input fields: "Contact", "ID", "Name", "Number of vehicles", and "Add Citizen". On the left, a sidebar titled "User Login" shows "Admin Login" selected. The main sidebar under "Menu" includes "Add Citizen Data" (selected), "Add Citizen Data", "Remove Citizen Data", "Add Police Officer", "Remove Police Officer", "View Vehicles Entered", "Add Road", "Remove Road", and "Show Roads". "Add Citizen Data" is highlighted with a red border. On the right, there are "Deploy" and three-dot menu icons.

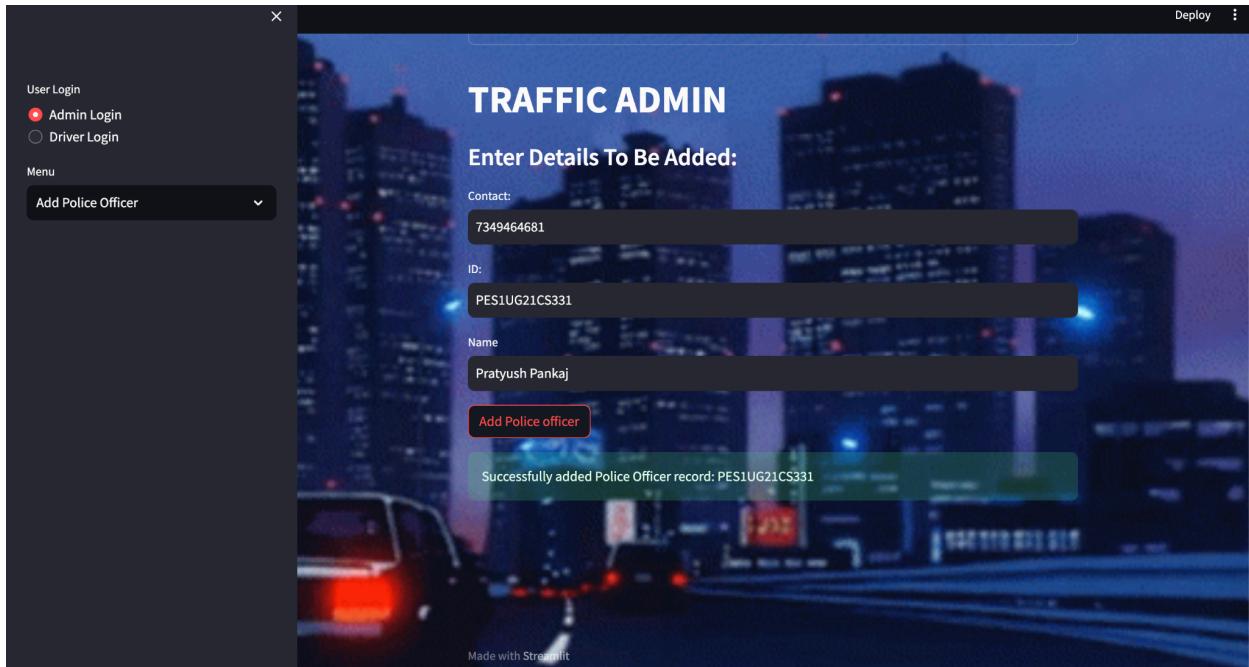
## Adding citizen data



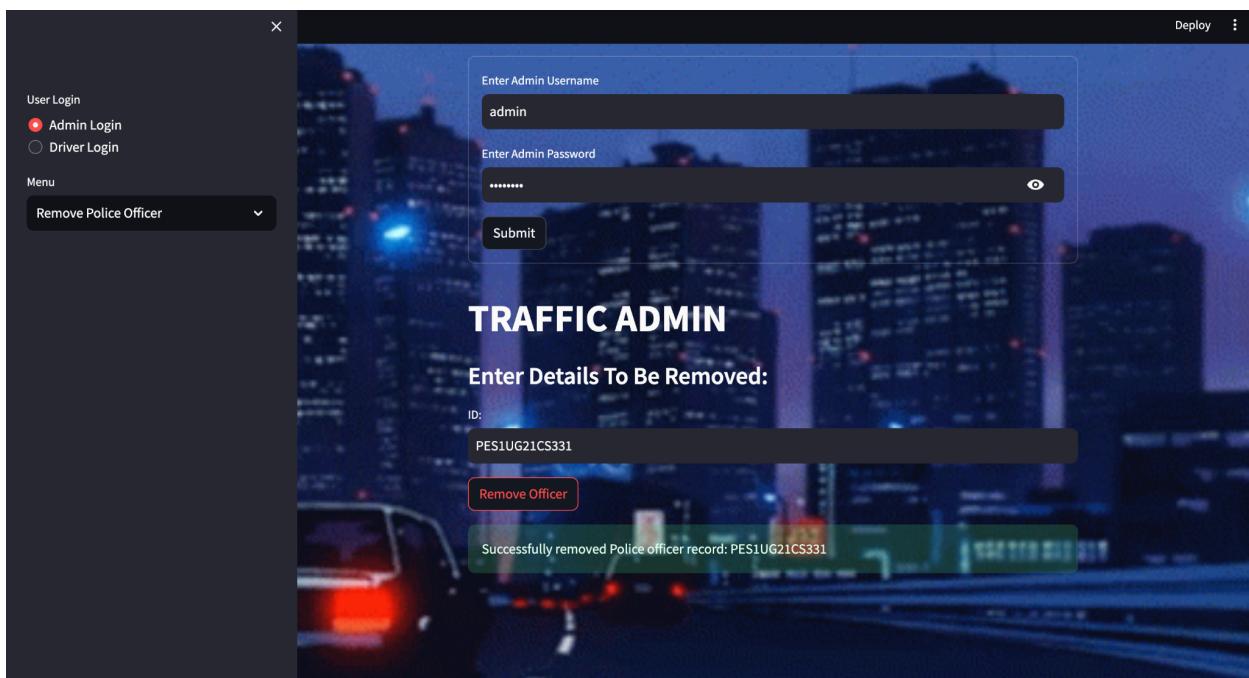
## Removing citizen data



## Adding police officer



## Removing citizen data



## Viewing all vehicles present on roads

User Login

- Admin Login
- Driver Login

Menu

View Vehicles Entered

The screenshot shows a Streamlit application interface. At the top left is a sidebar with 'User Login' and two radio button options: 'Admin Login' (selected) and 'Driver Login'. Below this is a 'Menu' section with a dropdown menu containing 'View Vehicles Entered'. The main content area has a title 'TRAFFIC ADMIN' and a subtitle 'Vehicles\_Entered:'. Below this is a table titled 'View all vehicle details' with the following data:

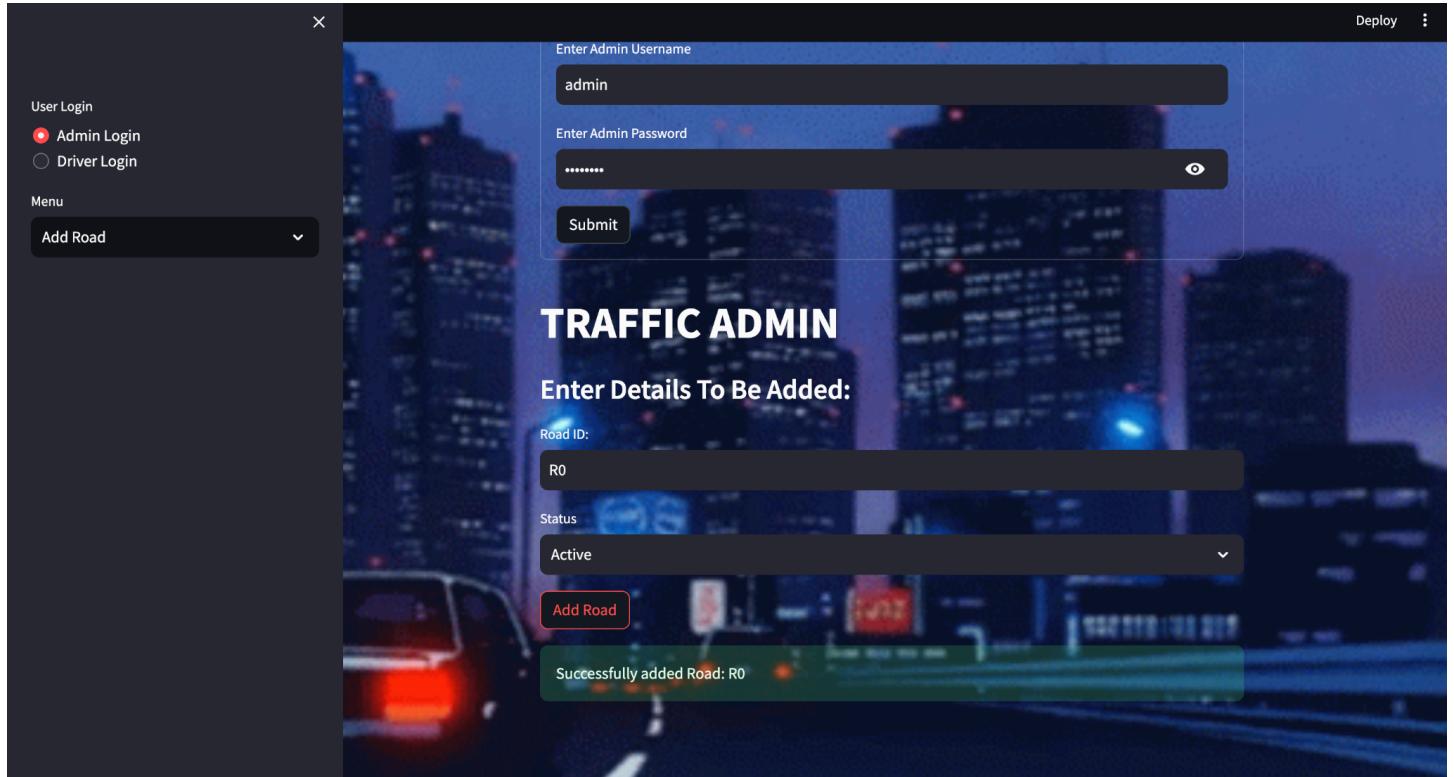
	Date	Type	OwnerType	VehicleNumber	RoadID	ID	Name
0	2023-11-25	Two wheeler	Citizen	KA05783	R1	PES1UG21CS489	Rishika Kinge
1	2023-11-25	Two wheeler	Citizen	KA05782	R1	PES1UG21CS524	Meghana Goru
2	2023-11-25	Two wheeler	Officer	KA05788	R1	PES1UGCS100	Nagasundhari
3	2023-11-25	Two wheeler	Officer	KA05788	R2	PES1UGCS101	Sivagamasundhari

Made with Streamlit

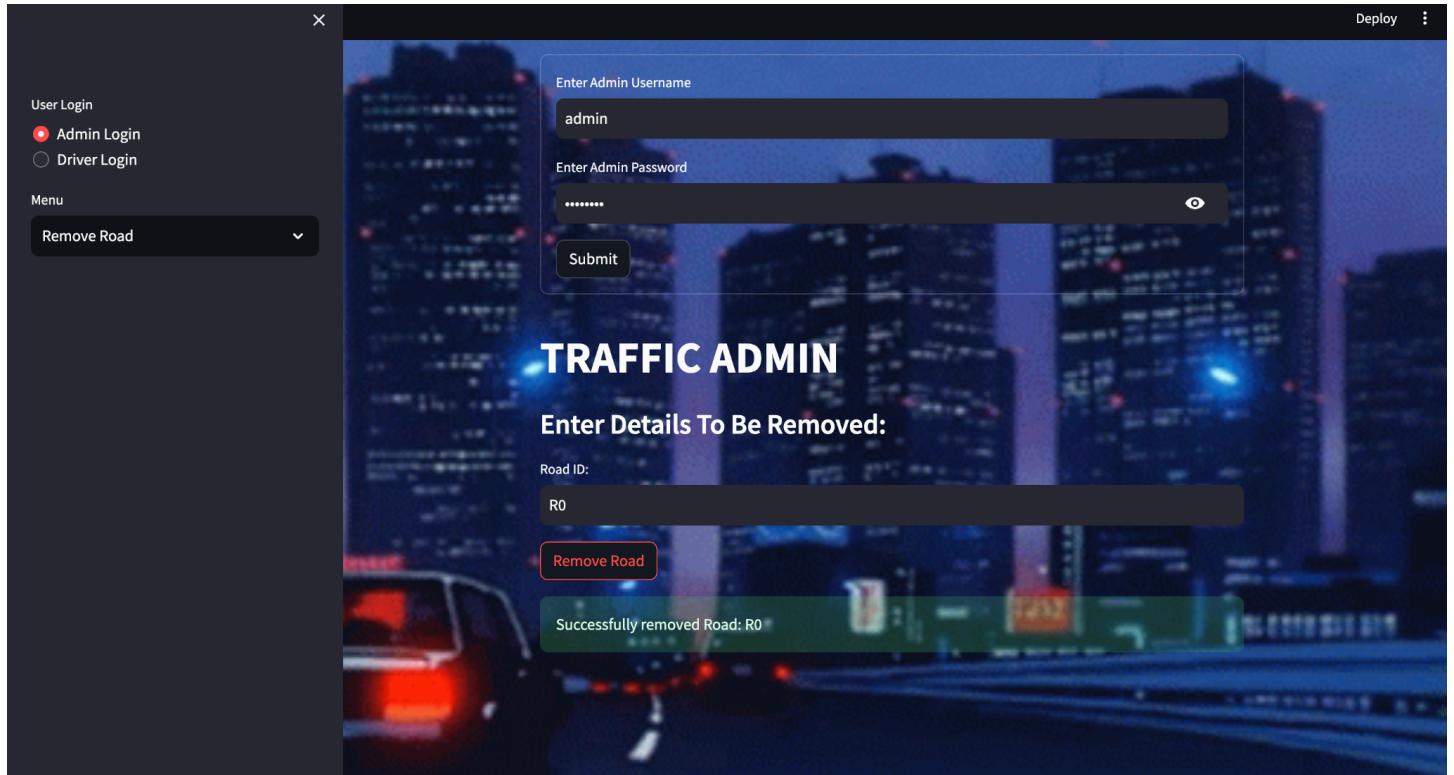
A screenshot of a Streamlit application displaying a table of vehicle entry details. The table has the following columns: Date, Type, OwnerType, VehicleNumber, RoadID, ID, Name, and Contact. The data is identical to the one shown in the previous screenshot.

	Date	Type	OwnerType	VehicleNumber	RoadID	ID	Name	Contact
0	2023-11-25	Two wheeler	Citizen	KA05783	R1	PES1UG21CS489	Rishika Kinge	8310730145
1	2023-11-25	Two wheeler	Citizen	KA05782	R1	PES1UG21CS524	Meghana Goru	9353820323
2	2023-11-25	Two wheeler	Officer	KA05788	R1	PES1UGCS100	Nagasundhari	919299292
3	2023-11-25	Two wheeler	Officer	KA05788	R2	PES1UGCS101	Sivagamasundhari	020202002

Adding a road



## Removing a road



## Viewing the status of all roads

User Login

Admin Login  
 Driver Login

Menu

Show Roads

Deploy :

The dashboard features a cityscape background with blurred lights from vehicles. In the top right corner, there's a "Submit" button and a small eye icon. On the left, a sidebar includes "User Login" with radio buttons for "Admin Login" (selected) and "Driver Login". Below that is a "Menu" section with a dropdown set to "Show Roads". The main content area has a title "TRAFFIC ADMIN" and a subtitle "All Roads:". A table titled "Status of the Roads" displays the following data:

	Road ID	Status
0	R1	Occupied
1	R2	Occupied
2	R3	Active
3	R4	Active
4	R5	Active

Made with Streamlit

## Distribution of roads

User Login

Admin Login  
 Driver Login

Menu

Number of roads occupied

Deploy :

The dashboard features a cityscape background with blurred lights from vehicles. In the top right corner, there's a "Submit" button and a small eye icon. On the left, a sidebar includes "User Login" with radio buttons for "Admin Login" (selected) and "Driver Login". Below that is a "Menu" section with a dropdown set to "Number of roads occupied". The main content area has a title "TRAFFIC ADMIN" and a subtitle "Number of roads occupied by citizens and police officers:". A table titled "Number of records per officer and citizen" displays the following data:

	Total records	Owner Type	Date
0	2	Citizen	2023-11-25
1	2	Officer	2023-11-25

Made with Streamlit

## Police officers off duty

User Login

Admin Login  
 Driver Login

Menu

No police

Deploy :

The screenshot shows a Streamlit application window titled "TRAFFIC ADMIN". On the left sidebar, there are links for "User Login" (with "Admin Login" selected), "Driver Login", and a "Menu" dropdown set to "No police". The main area has a dark background with a blurred cityscape at night. A login form is displayed with fields for "Enter Admin Username" containing "admin" and "Enter Admin Password" containing "\*\*\*\*\*". A "Submit" button is present. Below the login form, the title "TRAFFIC ADMIN" is centered, followed by the text "Not supervised by Police:". A table titled "Officers that are absent from duty" lists three entries:

	Contact	ID	Name
0	1993993930	PES1UGCS102	Bhargavi
1	9192202001	PES1UGCS103	Ashwini
2	199390302	PES1UGCS104	BJD

## Citizens off roads

User Login

Admin Login  
 Driver Login

Menu

No citizens

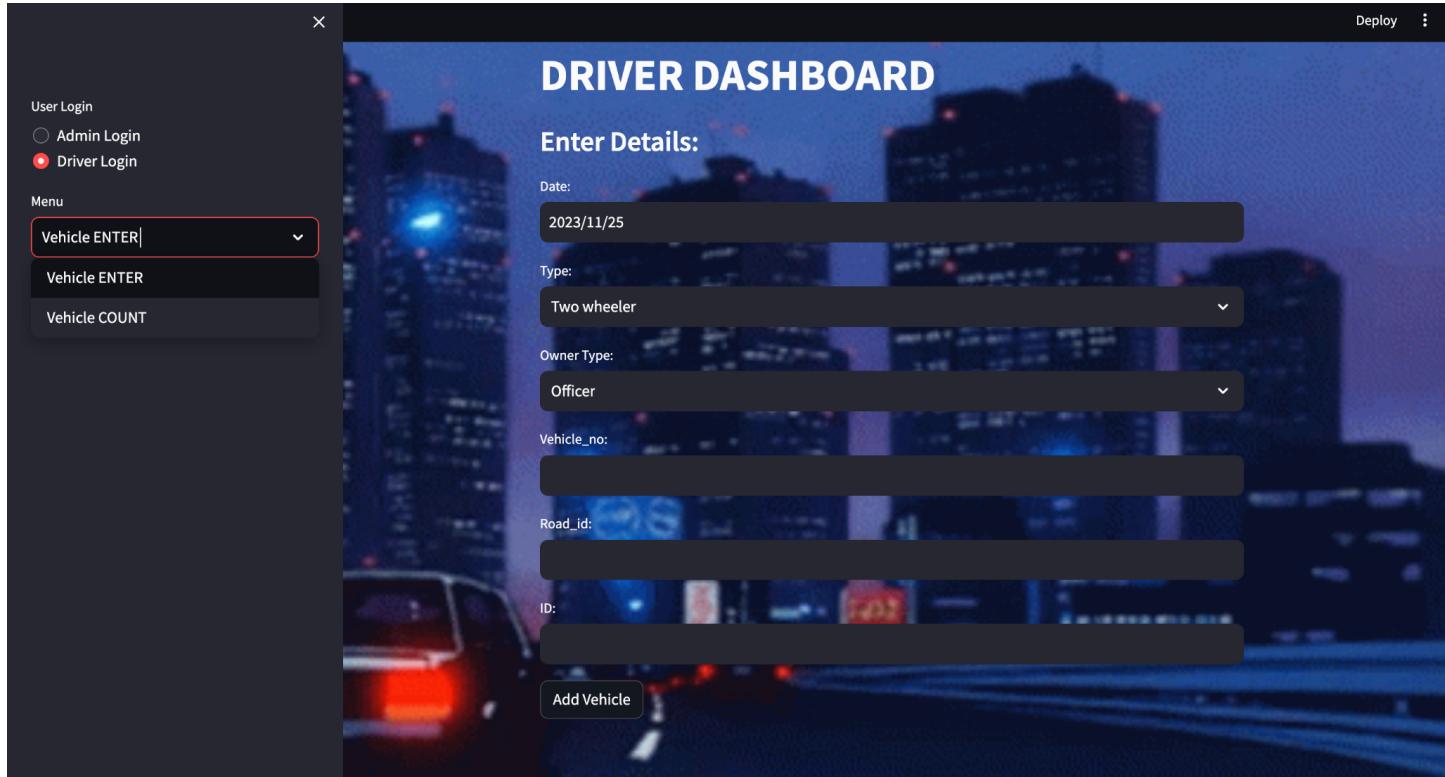
Deploy :

The screenshot shows a Streamlit application window titled "TRAFFIC ADMIN". On the left sidebar, there are links for "User Login" (with "Admin Login" selected), "Driver Login", and a "Menu" dropdown set to "No citizens". The main area has a dark background with a blurred cityscape at night. A login form is displayed with fields for "Enter Admin Password" containing "\*\*\*\*\*". A "Submit" button is present. Below the login form, the title "TRAFFIC ADMIN" is centered, followed by the text "Not occupied by Citizens:". A table titled "Citizens driving" lists three entries:

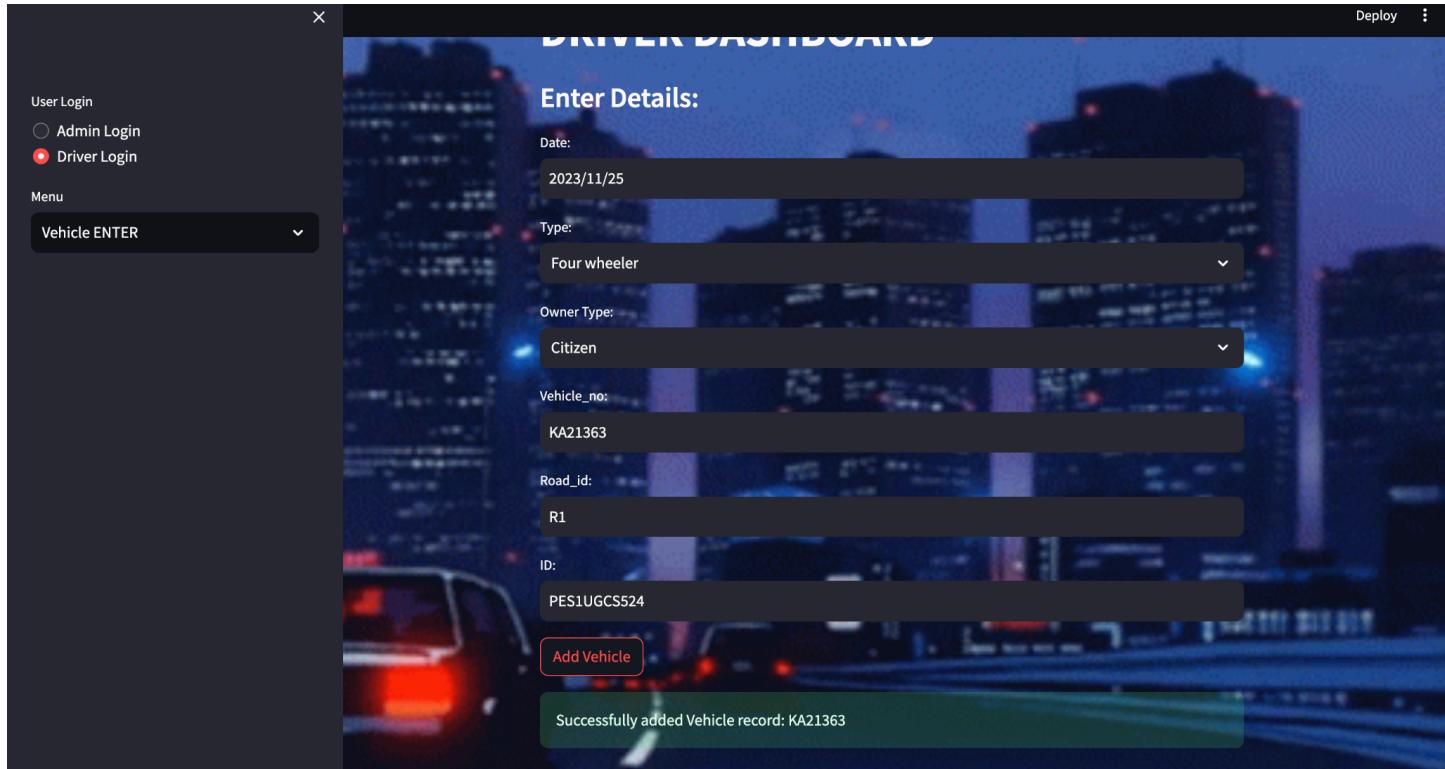
	Contact	ID	Name	No of cars
0	9845648878	PES1UG21CS490	Mihir Sanjay	1
1	9916947028	PES1UG21CS491	Rishi Kinger	2
2	9845647028	PES1UG21CS492	Sanjana Kinger	3

Made with Streamlit

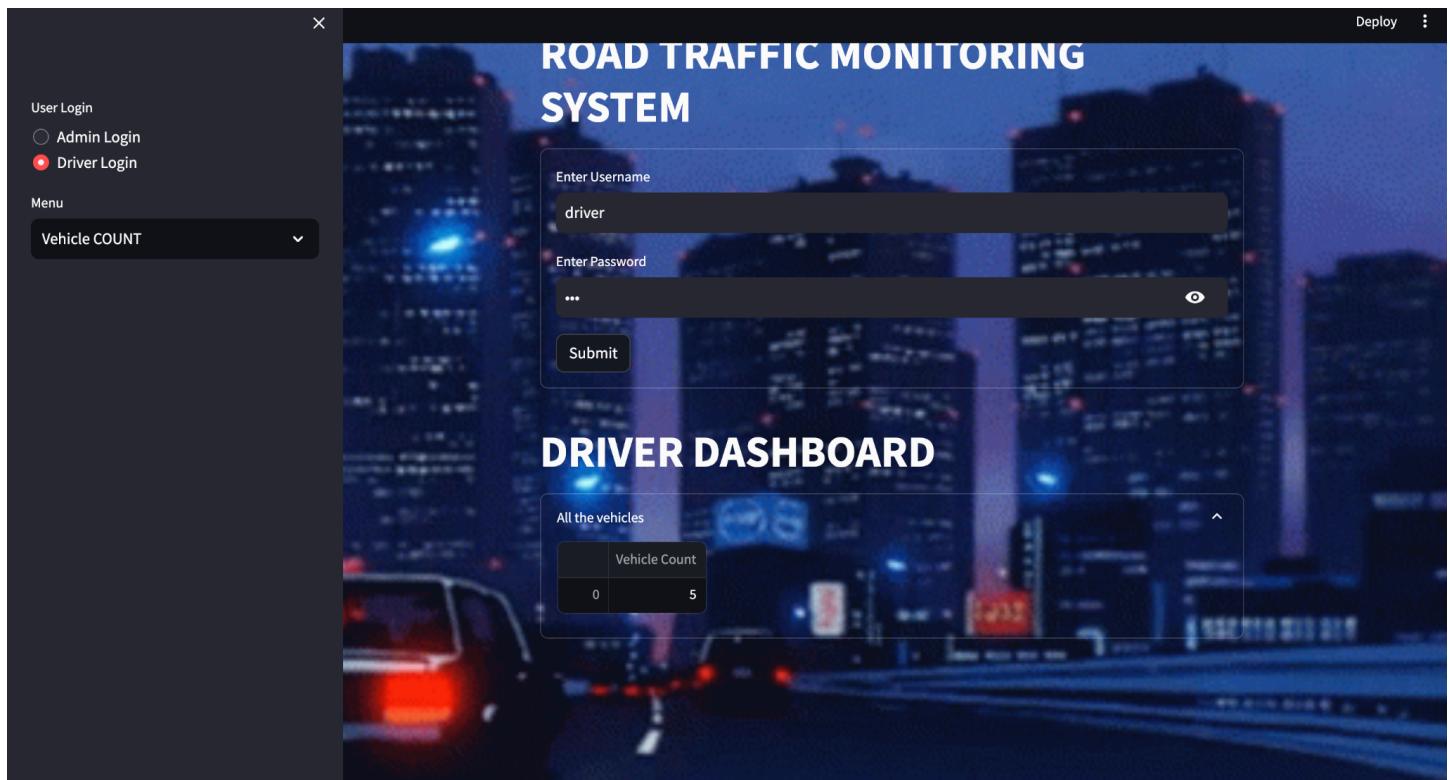
## Driver Dashboard



## Adding a vehicle



## Viewing number of vehicles



## QUERIES USED:

### 1. SQL file

```
create database dbmsfinal;
use dbmsfinal;
```

```
CREATE USER 'rkin'@'localhost' IDENTIFIED BY '2393';
GRANT ALL PRIVILEGES ON dbmsfinal.* TO 'rkin'@'localhost';
```

#### – Creating tables

```
CREATE TABLE road(road_id varchar(10) NOT NULL, Status
VARCHAR(50) DEFAULT 'Active',PRIMARY KEY(road_id));
```

```
CREATE TABLE Vehicle_in(Date DATETIME, Type TEXT NOT NULL,
Owner_type TEXT NOT NULL, Vehicle_no varchar(50) NOT NULL, P_id
varchar(2) NOT NULL, ID varchar(13) NOT NULL,PRIMARY KEY(ID,
Date),FOREIGN KEY(P_id) REFERENCES road(road_id));
```

```
CREATE TABLE citizen(Contact varchar(10) NOT NULL, ID varchar(13)
NOT NULL, Name varchar(50) NOT NULL, no_of_cars INT,PRIMARY
KEY(ID));
```

```
CREATE TABLE officer(Contact varchar(10) NOT NULL, ID varchar(13)
NOT NULL, Name varchar(50) NOT NULL,PRIMARY KEY(ID));
```

#### – Inserting dummy values

```
INSERT INTO citizen(Contact, ID , Name , no_of_cars) VALUES
("9353820323","PES1UG21CS524","Meghana Goru","1");
INSERT INTO citizen(Contact, ID , Name , no_of_cars) VALUES (
"8310730145","PES1UG21CS489","Rishika Kinger","1");
```

```
INSERT INTO citizen(Contact, ID , Name , no_of_cars) VALUES  
("9845648878","PES1UG21CS490","Mihir Sanjay","1");  
INSERT INTO citizen(Contact, ID , Name , no_of_cars) VALUES  
("9916947028","PES1UG21CS491","Rishi Kinger","2");  
INSERT INTO citizen(Contact, ID , Name , no_of_cars) VALUES  
("9845647028","PES1UG21CS492","Sanjana Kinger","3");
```

```
INSERT INTO officer(Contact , ID , Name ) VALUES  
("919299292","PES1UGCS100","Nagasundhari");  
INSERT INTO officer(Contact , ID , Name ) VALUES  
("020202002","PES1UGCS101","Sivagamasundhari");  
INSERT INTO officer(Contact , ID , Name ) VALUES  
("1993993930","PES1UGCS102","Bhargavi");  
INSERT INTO officer(Contact , ID , Name ) VALUES  
("9192202001","PES1UGCS103","Ashwini");  
INSERT INTO officer(Contact , ID , Name ) VALUES  
("199390302","PES1UGCS104","BJD");
```

```
INSERT INTO road(road_id, Status) VALUES ('R1', 'Active');  
INSERT INTO road(road_id, Status) VALUES ('R2', 'Active');  
INSERT INTO road(road_id, Status) VALUES ('R3', 'Active');  
INSERT INTO road(road_id, Status) VALUES ('R4', 'Active');  
INSERT INTO road(road_id, Status) VALUES ('R5', 'Active');
```

## – Procedure

```
DELIMITER //  
CREATE PROCEDURE StatusUpdation ( IN Road_id VARCHAR(2))  
BEGIN  
UPDATE road SET Status="Occupied" where road.road_id = Road_id ;  
END;  
//  
Delimiter ;
```

## – Trigger

```

DELIMITER //
CREATE TRIGGER SETSTATUS AFTER INSERT ON Vehicle_in
FOR EACH ROW
BEGIN
    CALL StatusUpdation(NEW.P_id);
END //
Delimiter ;

```

## 2. Queries in the python file

### Basic CRUD, SELECT operations

```

CREATE TABLE IF NOT EXISTS Vehicle_in(Date DATE, Type TEXT,
Owner_type TEXT, Vehicle_no varchar(50), P_id varchar(2), ID
varchar(13))

```

```

INSERT INTO Vehicle_in(Date, Type, Owner_type, Vehicle_no,
P_id, ID) VALUES (%s, %s, %s, %s, %s, %s)

```

```

SELECT COUNT(P_id) from Vehicle_in

```

```

CREATE TABLE IF NOT EXISTS citizen(Contact varchar(10), ID
varchar(13), Name varchar(50), no_of_cars INT)

```

```

CREATE TABLE IF NOT EXISTS officer(Contact varchar(10), ID
varchar(13), Name varchar(50))

```

```

CREATE TABLE IF NOT EXISTS road(road_id varchar(2), Status TEXT)

```

```

INSERT INTO citizen(Contact, ID, Name, no_of_cars) VALUES
(%s, %s, %s, %s)

```

```

DELETE FROM citizen WHERE ID = "{}"

```

```
INSERT INTO officer(Contact , ID , Name ) VALUES (%s,%s,%s)
```

```
DELETE FROM officer WHERE ID=%s
```

```
INSERT INTO road(road_id , Status) VALUES (%s,%s)
```

```
DELETE FROM road WHERE road_id=%s
```

```
SELECT * FROM road
```

## Nested Queries

```
SELECT * FROM officer WHERE officer.ID NOT IN ( SELECT ID FROM Vehicle_in);
```

```
Select * from citizen where citizen.ID NOT IN(Select ID from Vehicle_in)
```

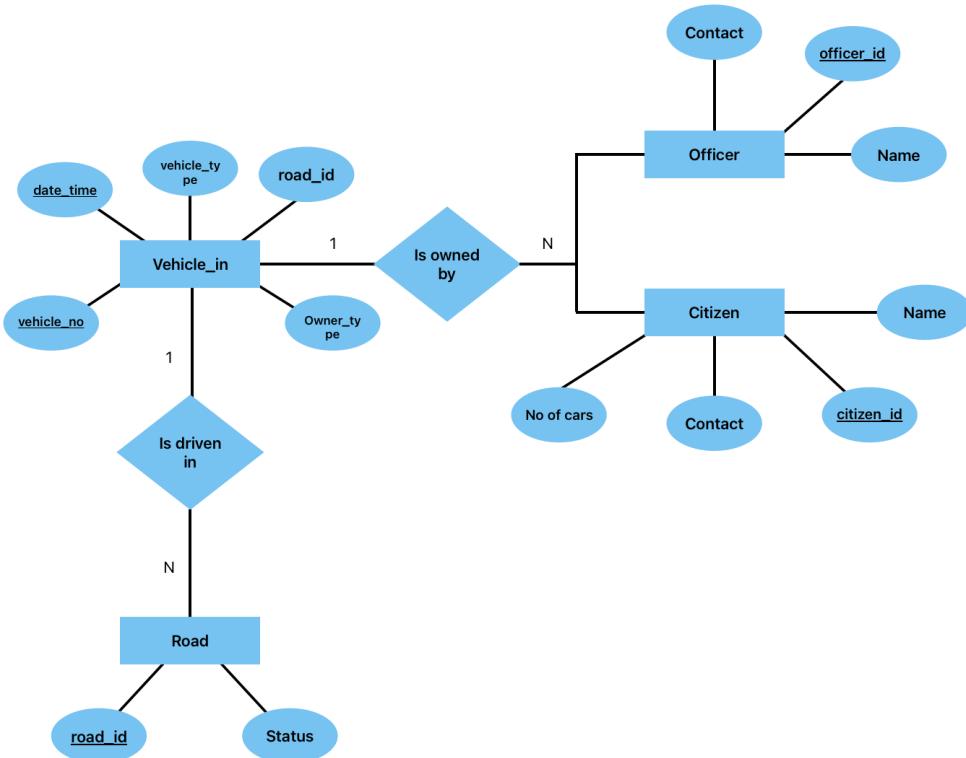
## Join query

```
SELECT Vehicle_in.Date, Vehicle_in.Type, Vehicle_in.Owner_type AS OwnerType, Vehicle_in.Vehicle_no AS VehicleNumber, Vehicle_in.P_id AS RoadID, Vehicle_in.ID, COALESCE(officer.Name, citizen.Name) AS Name, COALESCE(officer.Contact, citizen.Contact) AS Contact FROM Vehicle_in LEFT JOIN officer ON Vehicle_in.Owner_type = 'Officer' AND Vehicle_in.ID = officer.ID LEFT JOIN citizen ON Vehicle_in.Owner_type = 'Citizen' AND Vehicle_in.ID = citizen.ID;
```

## Aggregate Query

```
SELECT count(*) as total_records,Owner_type,Date   FROM  
Vehicle_in group by date,Owner_type;
```

# ER DIAGRAM



# RELATIONSHIP SCHEMA IN THIRD NORMAL FORM

Vehicle\_info

vehicle\_no, vehicle\_type, owner\_type

Vehicle\_road

vehicle\_no, date\_time, road\_id

Road

road\_id, status

Officer

officer\_id, name, contact

Citizen

citizen\_id, name, contact, no\_of\_cars