SQL Exercise on Traffic Data Management

Objective:

Apply SQL operations to manage and analyze traffic data stored in relational databases.

Instructions:

Write SQL queries to perform the following tasks related to managing traffic data.

Tasks:

1. **Table Creation:**

   Create a table named `traffic_data` with columns:

   - `road` (VARCHAR2)
   - `traffic_date` (DATE)
   - `traffic_time` (TIMESTAMP)
   - `traffic_volume` (INTEGER)
   - `weather_condition` (VARCHAR2)
   - `vehicle_type_breakdown` (VARCHAR2)

2. **Insert Operations:**

   Insert traffic data into the `traffic_data` table for a road section:

   - Road: "Highway A1"
   - Date: "2024-07-11"
   - Time: "08:00"
   - Traffic Volume: 1200 vehicles
   - Weather Condition: "Clear"
   - Vehicle Type Breakdown: '{"car": 800, "truck": 300, "motorcycle": 100}'

3. **Query Operations:**

   - Write a query to retrieve all columns for the first recorded traffic data in the table.
   - Write a query to find and display all records where the traffic volume is greater than 1000 vehicles. Include weather conditions and vehicle type breakdown in the results.

4. **Update Operations:**

   - Update the traffic volume to 1500 vehicles for all records where the road is "Highway A1" and the time is between "08:00" and "10:00" on "2024-07-11".
   - Update the vehicle type breakdown to '{"car": 850, "truck": 320, "motorcycle": 130}' for the record with the highest traffic volume.

5. **Delete Operations:**

   - Delete all records where the weather condition is "Rainy".

- Delete records where the traffic volume is less than 500 vehicles and the date is before "2024-07-11".

Example Table Creation SQL:

```
CREATE TABLE traffic_data (
    road VARCHAR2(50),
    traffic_date DATE,
    traffic_time TIMESTAMP,
    traffic_volume INTEGER,
    weather_condition VARCHAR2(20),
    vehicle_type_breakdown VARCHAR2(4000)
);
```