MOHAN BABU UNIVERSITY

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SCHOOL OF COMPUTING

DEPARTMENT OF COMPUTER SCIENCE

A DATA STRUCTURES PROGRAM
ON
"TRAFFIC MANAGEMENT SYSTEM "

Submitted By:

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MARKS OBTAINED

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DESCRIPTION:

A Traffic Management System is a highly integrated solution that relies on a network of sensors, communication technologies, and data analysis. It continually collects and processes data from various sources, allowing it to detect traffic anomalies, accidents, and congestion in real-time.

This system employs advanced algorithms and traffic management strategies to mitigate these issues. For example, it can adjust traffic signal timings, prioritize emergency services, and provide dynamic routing for drivers. Moreover, it disseminates valuable information to commuters through digital platforms, such as mobile apps, websites, and electronic signs, ensuring they can make informed decisions while on the road.

By reducing traffic congestion, enhancing road safety, and improving public transportation efficiency, a Traffic Management System plays a pivotal role in enhancing the quality of urban living, while also contributing to a more sustainable and environmentally friendly transportation system.

SOURCE CODE:

```
from collections import deque

class Vehicle:
    def __init__(self, license_plate, location, is_emergency_vehicle):
        self.license_plate = license_plate
        self.location = location
        self.is_emergency_vehicle = is_emergency_vehicle


# Traffic Management System class
class TrafficManagementSystem:
    def __init__(self):
        self.traffic_queue = deque()
```

```
    def add_vehicle_to_queue(self, vehicle):
        self.traffic_queue.append(vehicle)
        print(f"Vehicle {vehicle.license_plate} added to the traffic queue.")

    def manage_traffic(self):
        while self.traffic_queue:
            current_vehicle = self.traffic_queue.popleft()
            if current_vehicle.is_emergency_vehicle:
                print(f"Emergency vehicle {current_vehicle.license_plate} is given priority.")
                # Additional emergency routing logic can go here
            else:
                print(f"Managing traffic for vehicle {current_vehicle.license_plate}")
                # Regular traffic management logic here


# Main function
if __name__ == "__main__":
    traffic_system = TrafficManagementSystem()

    # Simulate adding vehicles
    vehicle1 = Vehicle("ABC123", "Location1", False)
    vehicle2 = Vehicle("XYZ789", "Location2", True)

    traffic_system.add_vehicle_to_queue(vehicle1)
    traffic_system.add_vehicle_to_queue(vehicle2)
```

```
# Simulate traffic management
traffic_system.manage_traffic()
```

OUTPUT:

```
Vehicle ABC123 added to the traffic queue.
Vehicle XYZ789 added to the traffic queue.
Managing traffic for vehicle ABC123
Emergency vehicle XYZ789 is given priority.
```