Project Report – Logistics Management System
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Project repository URL link: https://github.com/chathuniM/My-Project-Report.git
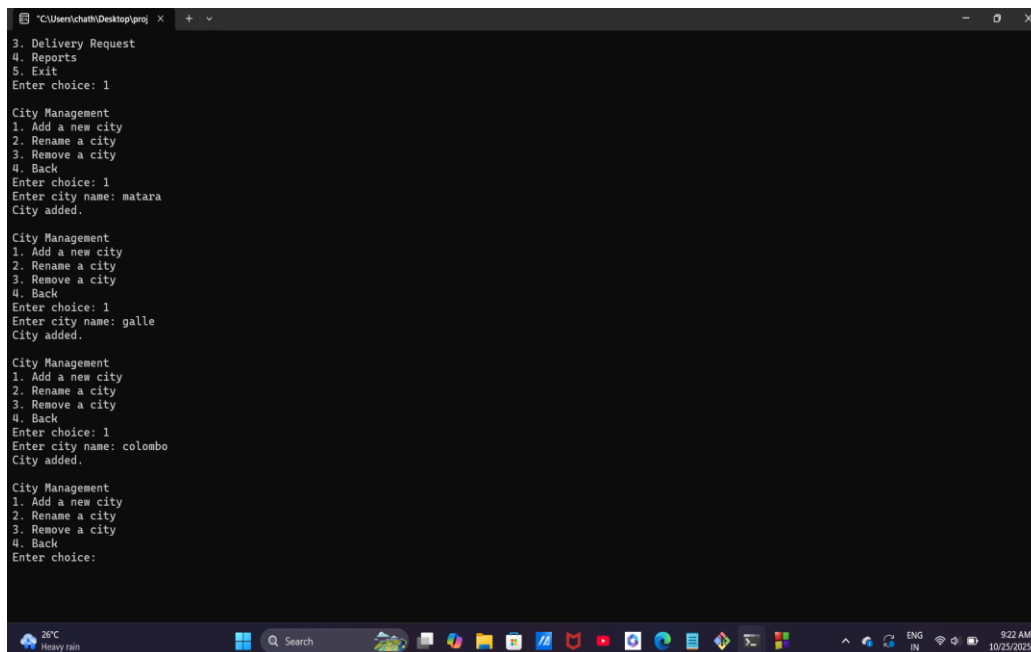
1.Project Objective

The purpose of this project is to design and implement a menu-driven logistics management system in C. It uses arrays, structures, functions, loops, and conditionals to simulate real logistics operations like managing cities, delivery routes, vehicles, and calculating delivery costs.

System Functionalities
City Management • Add, rename, or remove up to 30 cities.
• City names are stored in a string array.
• Functions used: addCity(), renameCity(), removeCity(), findCityIndex()

Adding the addCity function:

Adding renameCity function:

Adding removeCity function:

2.Distance Management

- Distances stored in a 2D array: int distance[MAX_CITIES][MAX_CITIES];
- Distance from   a city to itself = 0
- Distance is symmetrical (distance[i][j] = distance[j][i])
- Functions used: editDistance(), displayDistanceTable(), initializeDistance()

```
2. Rename a city
3. Remove a city
4. Back
Enter choice: 4

Logistics Management System
1. City Management
2. Distance Management
3. Delivery Request
4. Reports
5. Exit
Enter choice: 2

Distance Management
1. Input or edit distances
2. Display distance table
3. Back
Enter choice: 1
Enter source city name: matara
Enter destination city name: colombo
Enter distance (km): 120
Distance updated.

Distance Management
1. Input or edit distances
2. Display distance table
3. Back
Enter choice: 2
Distance Table:
             Colombo      Kandy       Galle       matara      colombo
Colombo      0            120         115         -           -
Kandy        120          0           230         -           -
Galle        115          230         0           -           -
matara       -            -           -           0           120
colombo      -            -           -           120         -

Distance Management
1. Input or edit distances
2. Display distance table
3. Back
Enter choice:
```

3. Vehicle Management

Three vehicles are defined using structures:

```
struct Vehicle {
  char name[10];
  int capacity;
  int rate_per_km;
  int avg_speed; int fuel_eff;
  };
```

4.Delivery Request Handling

The user inputs:

• Source city
• Destination city
• Weight (kg)
• Vehicle type (Van/Truck/Lorry)

The system validates:

• Source ≠ Destination
• Weight ≤ Vehicle capacity

Then calculates: Delivery Cost = D × R × (1 + W/10000)

Time = D / S
Fuel Used = D / E
Fuel Cost = Fuel Used × 310
Total Cost = Delivery Cost + Fuel Cost
Profit = Delivery Cost × 0.25
Final Charge = Total Cost + Profit

5.Reports

- Shows number of deliveries, total distance, and total profit.

- Displays average delivery time and highest cost delivery.

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DELIVERY COST ESTIMATION
---------------------------------------------------------
From: Colombo
To: Jaffna
Minimum Distance: 400 km
Vehicle: Truck
Weight: 2000 kg
---------------------------------------------------------
Base Cost: 400 × 40 × (1 + 2000/10000) = 19200.00 LKR
Fuel Used: 66.67 L
Fuel Cost: 20666.67 LKR
Operational Cost: 39866.67 LKR
Profit: 4800.00 LKR
Customer Charge: 44666.67 LKR
Estimated Time: 8.00 hours


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```


6.Conclusion

This project demonstrates how arrays, structures, functions, and algorithms can be used to simulate a real logistics management system in C.

It performs city management, vehicle handling, cost estimation, and profit calculations efficiently.