Logistics Management System

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Github Repository URL:	https://github.com/Dulakshan2003/Logistics-management-system.git
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Introduction

Introduction

The Logistics Management System is a C language–based program created for the CSC 1012 – Introduction to Computer Programming module. The project's main goal is to develop a menu-driven application that replicates the core functions of a logistics company, such as managing cities, defining distances, and handling deliveries. The system allows users to add and modify cities, record distances between them, assign vehicles for transport, and estimate delivery time and cost. Through a structured and user-friendly interface, it demonstrates the use of essential programming concepts including arrays, loops, conditional statements, and functions.

In real-world logistics, efficient management of routes, vehicles, and delivery schedules is vital for minimizing cost and improving performance. This project applies computational logic to model those real-world operations using C programming techniques. It highlights the importance of modular program design, data organization, and structured problem-solving in developing practical software solutions. Overall, the Logistics Management System bridges theoretical programming knowledge with practical application, showing how code can support and optimize logistics decision-making.

https://github.com/Dulakshan2003/Logistics-management-system.git

Objectives

- The main objective of this project is to design and implement a menu-driven Logistics Management System using the C programming language.

- The system is developed to simulate the basic operations of a logistics company, such as managing cities, defining intercity distances, and handling delivery requests.

- It allows users to calculate delivery costs, fuel consumption, and estimated travel time efficiently.

- The project applies fundamental programming concepts such as arrays, functions, loops, conditionals, and file handling to create a modular and efficient program.

- Ultimately, the goal is to use structured programming techniques to provide a practical solution for real-world logistics management problems.

System Functionalities

The system provides the following five features:

1. Manage Cities
- Add City- Add a new city to the system.
- Rename City-Change the name of an existing city
- Remove City- Delete a city from the system
- Show Cities- Display the list of all cities

2. Manage Distances
- Input/Edit Distance- Enter or modify the distance between cities
- Display Distance Table- Show a table of all city distances

3. Show Vehicles- Display the details of all available vehicles

4. Delivery Cost Estimation- Calculate the delivery cost between cities

5. Reports- Generate reports for deliveries, costs, and other data

Results

1. Add city

2. Show city function

3. Adding the rename city function

```
enter your choice:1
------ city Management ------
1. Add City
2. Rename city
3. Remove cities
4. Show Cities
5. back to main menu
Enter your choice: 1
Enter city name: colombo
City added successfully!
------ city Management ------
1. Add City
2. Rename city
3. Remove cities
4. Show Cities
5. back to main menu
Enter your choice: 2

--- City List ---
1. colombo
Enter city number to rename:1
Enter new name:matara
City renamed successfully!
------ city Management ------
1. Add City
2. Rename city
3. Remove cities
4. Show Cities
5. back to main menu
Enter your choice:
```

4. Adding the remove city function

```
2. Rename city
3. Remove cities
4. Show Cities
5. back to main menu
Enter your choice: 2

--- City List ---
1. colombo
Enter city number to rename:1
Enter new name:matara
City renamed successfully!
------ city Management ------
1. Add City
2. Rename city
3. Remove cities
4. Show Cities
5. back to main menu
Enter your choice: 3

--- City List ---
1. matara
Enter city number to remove:1
city removed successfully....
------ city Management ------
1. Add City
2. Rename city
3. Remove cities
4. Show Cities
5. back to main menu
Enter your choice:
```

5. Adding the input distance function


```
==============================
--Logistics Management System--
==============================
1. Manage cities
2. Manage distance
3. manage vehicles
4. manage deliveri
5. Exit
enter your choice:2
------ Distance Management ------
1. Input/Edit Distance
2. Display Distance Table
3. Back to Main Menu
Enter your choice: 1

--- City List ---
1. colombo
2. matara
Enter source city number: 1
Enter destination city number: 2
Enter distance between colombo and matara (km): 150
Distance recorded successfully!
------ Distance Management ------
1. Input/Edit Distance
2. Display Distance Table
3. Back to Main Menu
Enter your choice: |
```
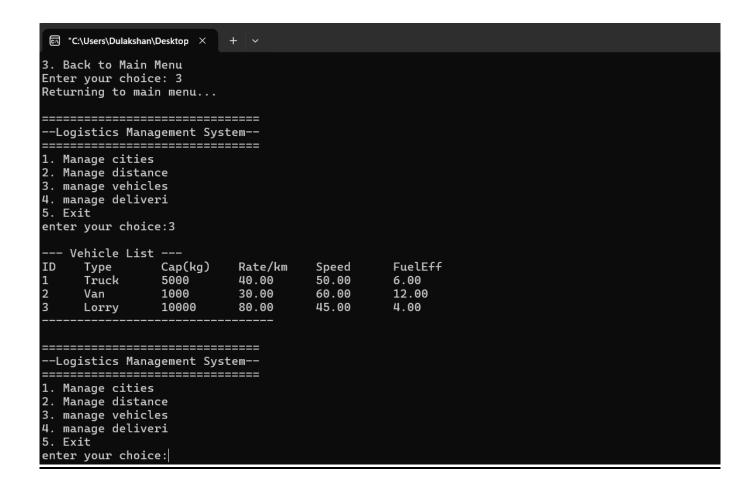
6. Adding the distance table function

```
 "C:\Users\Dulakshan\Desktop  ×     +   ∨

enter your choice:2
------ Distance Management ------
1. Input/Edit Distance
2. Display Distance Table
3. Back to Main Menu
Enter your choice: 1

--- City List ---
1. colombo
2. matara
Enter source city number: 1
Enter destination city number: 2
Enter distance between colombo and matara (km): 150
Distance recorded successfully!
------ Distance Management ------
1. Input/Edit Distance
2. Display Distance Table
3. Back to Main Menu
Enter your choice: 2

------ Distance Table (km) ------
       colombo    matara
colombo0           150
matara150          0
----------------------------------
------ Distance Management ------
1. Input/Edit Distance
2. Display Distance Table
3. Back to Main Menu
Enter your choice: |
```

7. Adding the manage vehicle function

```
3. Back to Main Menu
Enter your choice: 3
Returning to main menu...

===============================
--Logistics Management System--
===============================
1. Manage cities
2. Manage distance
3. manage vehicles
4. manage deliveri
5. Exit
enter your choice:3

--- Vehicle List ---
ID      Type        Cap(kg)     Rate/km     Speed       FuelEff
1       Truck       5000        40.00       50.00       6.00
2       Van         1000        30.00       60.00       12.00
3       Lorry       10000       80.00       45.00       4.00
----------------------------------

===============================
--Logistics Management System--
===============================
1. Manage cities
2. Manage distance
3. manage vehicles
4. manage deliveri
5. Exit
enter your choice:
```

8. Adding the manage delivery function

```
"C:\Users\Dulakshan\Desktop    X    +    ∨

--Logistics Management System--
==============================
1. Manage cities
2. Manage distance
3. manage vehicles
4. manage deliveri
5. Exit
enter your choice:3

--- Vehicle List ---
ID    Type        Cap(kg)     Rate/km     Speed       FuelEff
1     Truck       5000        40.00       50.00       6.00
2     Van         1000        30.00       60.00       12.00
3     Lorry       10000       80.00       45.00       4.00
-------------------------------


==============================
--Logistics Management System--
==============================
1. Manage cities
2. Manage distance
3. manage vehicles
4. manage deliveri
5. Exit
enter your choice:4
------ Delivery Management ------
1. Add Delivery
2. show deliveries
3. back to main menu
enter your choice:
```

```
==============================
--Logistics Management System--
==============================
1. Manage cities
2. Manage distance
3. manage vehicles
4. manage deliveri
5. Exit
enter your choice:4
------ Delivery Management ------
1. Add Delivery
2. show deliveries
3. back to main menu
enter your choice:1

--- Add New Delivery ---

--- City List ---
1. colombo
2. matara
Enter source city number: 1
Enter destination city number: 2

--- Vehicle List ---
ID      Type        Cap(kg)     Rate/km     Speed       FuelEff
1       Truck       5000        40.00       50.00       6.00
2       Van         1000        30.00       60.00       12.00
3       Lorry       10000       80.00       45.00       4.00
--------------------------------
Select vehicle number: |
```

9. show report

```
==============================
--Logistics Management System--
==============================
1. Manage cities
2. Manage distance
3. manage vehicles
4. manage deliveri
5. Exit
enter your choice:4
------ Delivery Management ------
1. Add Delivery
2. show deliveries
3. back to main menu
enter your choice:1

--- Add New Delivery ---

--- City List ---
1. colombo
2. matara
Enter source city number: 1
Enter destination city number: 2

--- Vehicle List ---
ID     Type      Cap(kg)     Rate/km     Speed       FuelEff
1      Truck     5000        40.00       50.00       6.00
2      Van       1000        30.00       60.00       12.00
3      Lorry     10000       80.00       45.00       4.00
------------------------------------
Select vehicle number: |
```

```
DELIVERY COST ESTIMATION
------------------------------------------------------
From: colombo
To: matara
Distance: 150 km
Vehicle: Van
Weight: 900.00 kg
------------------------------------------------------
Base Cost: 4905.00 LKR
Fuel Used: 12.50 L
Fuel Cost: 3875.00 LKR
Operational Cost: 8780.00 LKR
Profit: 1226.25 LKR
Customer Charge: 10006.25 LKR
Estimated Time: 2.50 hours
======================================================
------ Delivery Management ------
. Add Delivery
. show deliveries
. back to main menu
enter your choice:2

------ Delivery List ------
D: 1 | From: colombo -> To: matara | Vehicle: Van | Distance: 150 km | Charge: LKR 10006.25 | Status: Pending
--------------------------
------ Delivery Management ------
. Add Delivery
. show deliveries
. back to main menu
enter your choice:|
```

Conclusion

The Logistics Management System developed in C language successfully simulates the core operations of managing cities, distances, vehicles, and delivery costs. This system allows users to easily add, rename,

and remove cities, manage distances between them, view available vehicles, estimate delivery costs, and generate useful reports.

The project demonstrates fundamental programming concepts such as menu-driven interfaces, data storage using arrays and structures, and basic input/output operations. It also highlights the importance of systematic logistics management for effective transportation planning.

Overall, this system provides a practical, easy-to-use tool that can help users understand and manage logistics operations efficiently.

References

- **Lecture Materials**
- **W3school**
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