Entity Relationship (ERD) Analysis

TRANSPORT
SERVICE MATCH PLATFORM

Version	Description of Change	Author	Date
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1. Introduction

This document provides a step-by-step explanation of the Entity-Relationship Diagram (ERD) for the Logistics Management System. The ERD visually represents how participants interact within the system, how transport requests are handled, and how key attributes define each entity. The explanation will begin with a high-level overview and gradually delve deeper into each entity and its attributes.

2. High-Level Overview of the System

The system consists of two primary components (entities):

- **Participants:** These are users of the system who either request transport services or provide them or even can be both.
- **Transport Requests:** These represent orders where a participant (logistic requester) requests a delivery, and another participant (logistic provider) fulfills the request.

The Participants entity stores user details, and the Transport Requests entity contains information about each delivery request. The relationship between them ensures that every transport request is linked to both a requester and a provider.

3. Entities and their Relationships

3.1 Participant Entity

The **Participant** table contains information about users of the system. Each participant can either be:

- A **Logistic Requester** (who creates delivery requests)
- A **Logistic Provider** (who fulfills those requests)

Each participant is identified by a **unique ID (Primary Key)** and has attributes that store personal and contact information.

3.2 Transport Request Entity

The **Transport Request** table contains information about each delivery order. It's linked to both kind of participants:

- **LogisticRequestID (Foreign Key)**: Identifies the participant who created the delivery
- **LogisticProviderID (Foreign Key)**: Identifies the participant who is responsible for fulfilling the delivery.

This entity captures essential information such as pickup and drop-off locations, package details, delivery status, and payment information.

4. Description of Attributes

4.1 Participant Table

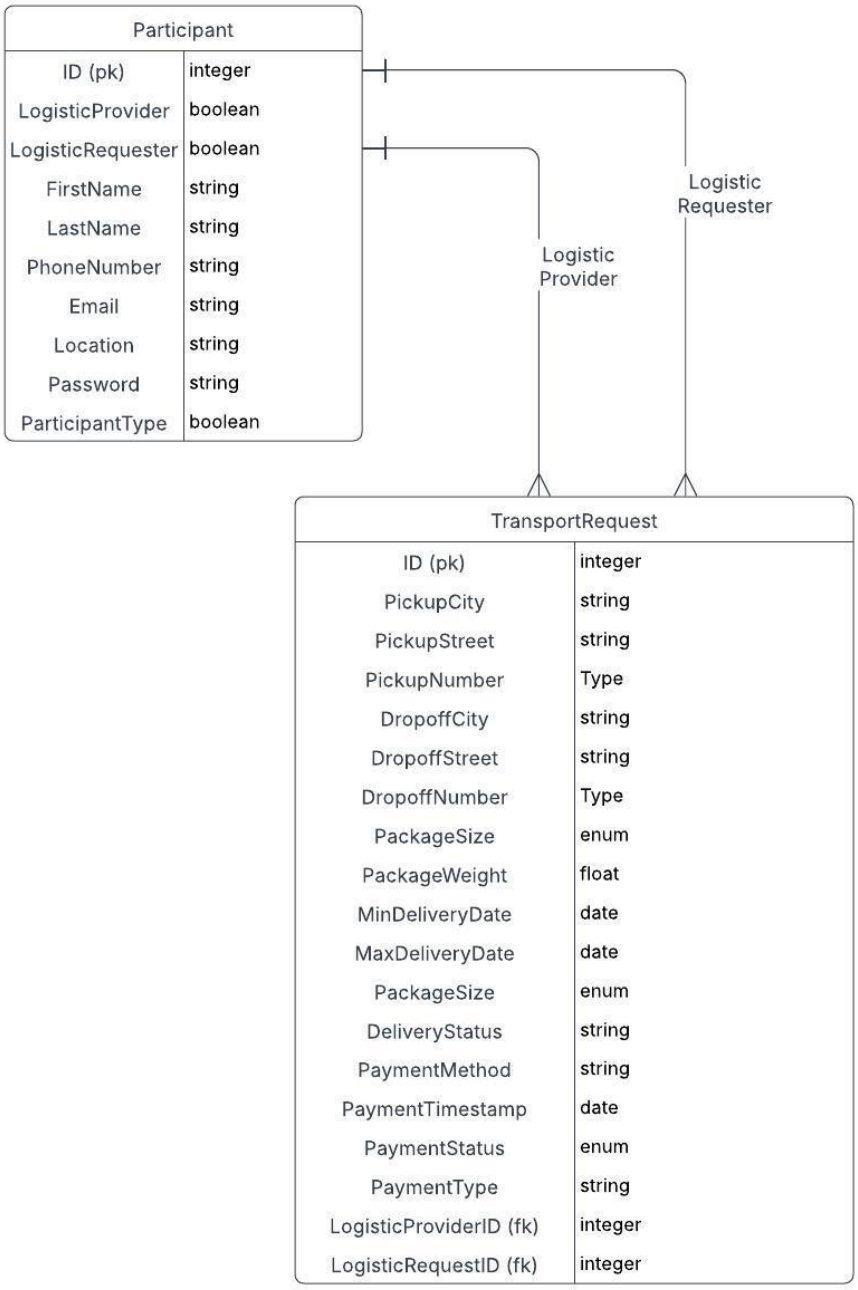
Attribute	Type	Description
ID (pk)	Integer	Unique identifier for each participant.
LogisticProvider	Boolean	Indicates whether the participant is a provider.
LogisticRequester	Boolean	Indicates whether the participant is a requester.
FirstName	String	First name of the participant.
LastName	String	Last name of the participant.
PhoneNumber	String	Contact number of the participant.
Email	String	Email address of the participant.
Location	String	Location details of the participant.
Password	String	Encrypted password for authentication.
ParticipantType	Boolean	Defines whether the user is a requester or provider.

4.1 Transport Request Table

Attribute	Type	Description
ID (pk)	Integer	Integer Unique identifier for each transport request.
PickupCity	String	City where the package is picked up.
PickupStreet	String	Street address for pickup.
PickupNumber	Type	Additional pickup location details.
DropoffCity	String	City where the package is delivered.
DropoffStreet	String	Street address for delivery.
DropoffNumber	Type	Additional drop-off location details.
PackageSize	Enum	Size category of the package.
PackageWeight	Float	Weight of the package in kg.
MinDeliveryDate	Date	Earliest possible delivery date.
MaxDeliveryDate	Date	Latest possible delivery date.
DeliveryStatus	String	Status of delivery (Pending, In Transit, Delivered).
PaymentMethod	String	Method of payment (Credit Card, PayPal, Cash, etc.).
PaymentTimestamp	Date	Date and time of payment.
PaymentStatus	Enum	Status of the payment (Paid, Pending, Failed).
PaymentType	String	Type of payment transaction.
LogisticProviderID (fk)	Integer	Foreign key linking to the logistic provider.
LogisticRequestID (fk)	Integer	Foreign key linking to the logistic requester.

5. Entity Relationship Diagram (ERD)

This ERD provides a structured view of how logistics requests are managed within the system. By defining clear relationships between participants and transport requests, the system efficiently tracks deliveries, payments, and user interactions. This document serves as a guide for understanding the structure and flow of data within the system, ensuring clarity and ease of implementation.



Graphique 1: *Entity-Relationship Diagram (ERD) for Transport Service Match Platform (UML Notation) . Realized using lucid.app* [i]

Methodology Note:

The Entity-Relationship Diagram (ERD) analysis for this project began in a classroom setting under the guidance of the teacher. The process followed a structured and iterative approach:

1. **Initial Conceptualization**: The main tables (entities) were identified first, focusing on the core components of the system: **Participant** and **Transport Request**.
2. **Attribute Definition**: After determining the main tables, the team worked on defining the attributes for each entity, ensuring they aligned with the system's functional requirements.
3. **Diagram Creation**: The ERD was created using **Lucid.app**, a collaborative diagramming tool, to visually represent the entities, attributes, and relationships.
4. **Iterative Refinement**: The ERD underwent multiple iterations to ensure alignment with specific requirements documents and stakeholder feedback. This iterative process allowed for continuous improvement and accuracy.
5. **Finalization**: The final ERD was validated against the system's requirements, ensuring it accurately reflected the data structure and relationships needed for the Logistics Management System.

This methodology ensured a clear, structured, and collaborative approach to designing the ERD, aligning it with both educational objectives and project requirements.