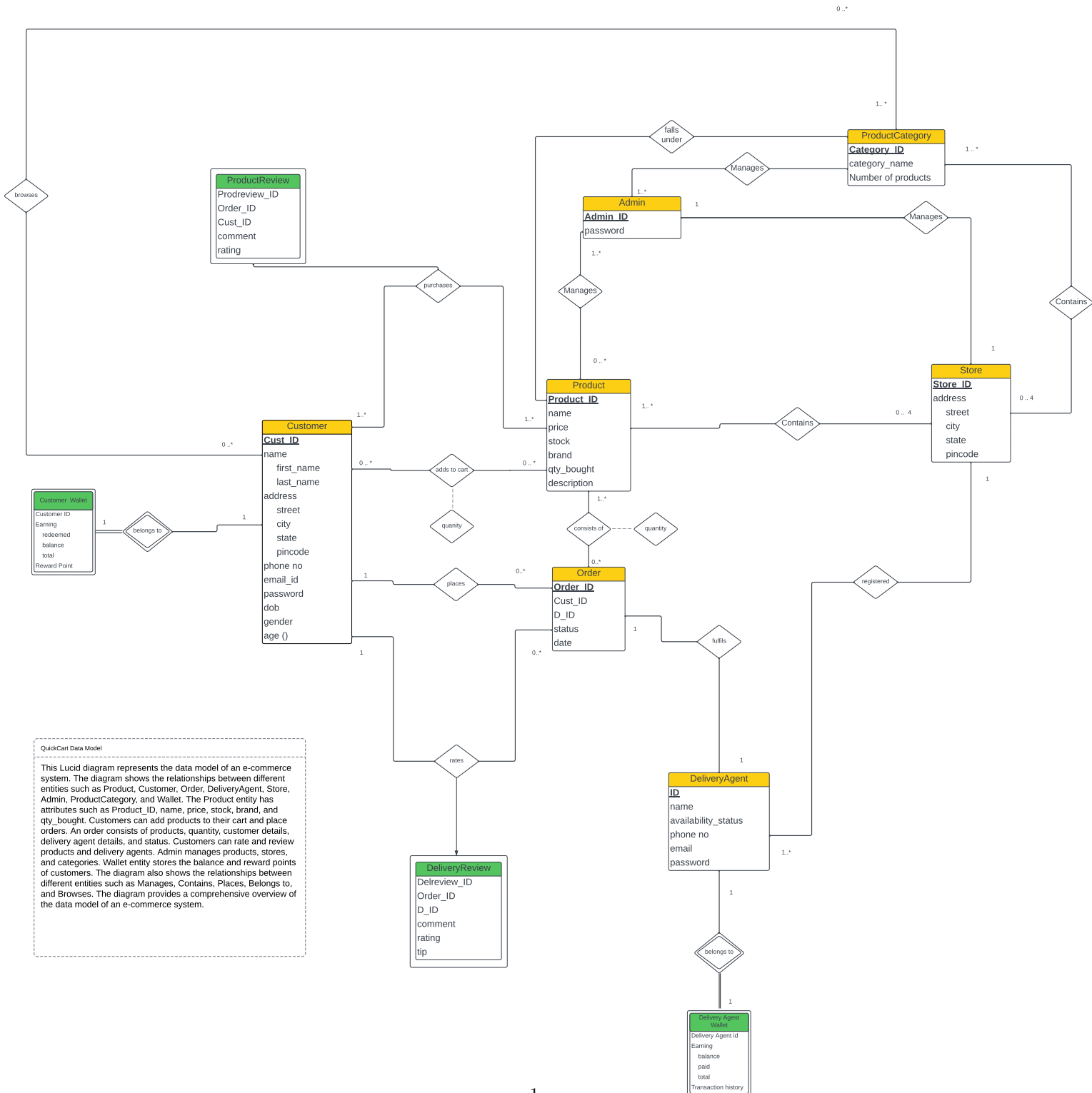


# QuickCart : An Online Retail Store

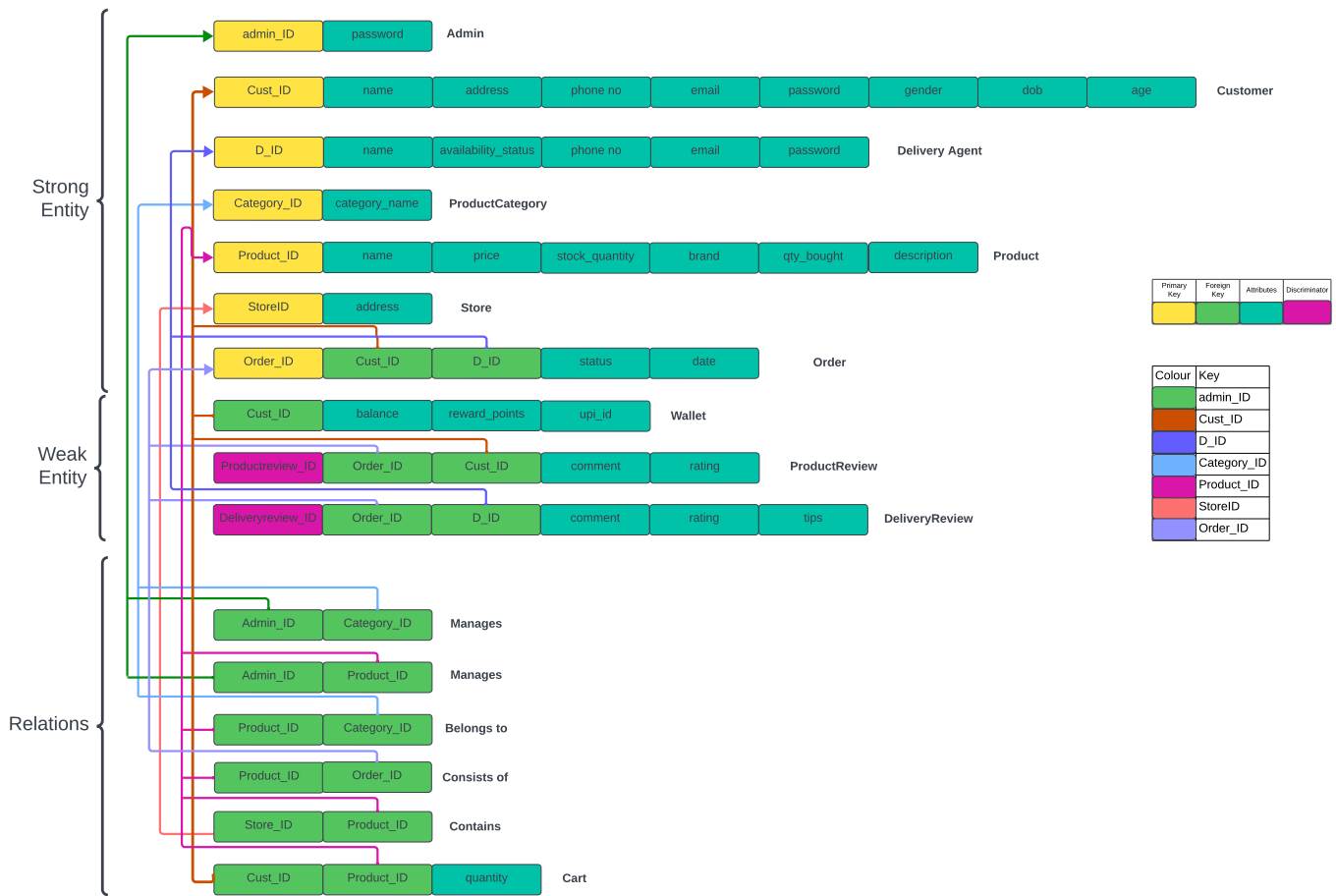
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## 1 Entity-Relational Model



## 2 Relational Model



[Link to the Models: Lucid Platform](#)

## 3 Entity set and their attributes

### 3.1 Strong Entity

- **Admin** (restricted to 4) - Represents administrative managers, one for each store, responsible for inventory management.  
**Attributes** – Admin\_ID, password.
- **Customer** - Represents individuals who use the QuickCart platform for online shopping.  
**Attributes** – Cust\_ID, name (first\_name, last\_name), address (street, city, state, pin), phone no, email, password, gender, age
- **Delivery Agent** - Represents individuals partnering with QuickCart for delivery services.  
**Attributes** – D\_ID, name, availability\_status, phone no, email, password
- **Product Category** - Represents categories in which products are classified for easy navigation.  
**Attributes** – Category\_ID, category\_name, no\_of\_products
- **Product** - Represents individual product listings available for purchase.  
**Attributes** – Product\_ID, name, price, stock, brand, qty\_bought, description

- **Store** (restricted to 4) - The store entity represents individual stores that supply products available on the QuickCart platform.  
**Attributes** – Store\_ID, address (street, city, state, pin)
- **Order** - Represents individual order placed by customers.  
**Attributes** – Order\_ID, Cust\_ID (foreign key), D\_ID (foreign key), status, date)

### 3.2 Weak Entity

- **Wallet** - Represents the virtual wallet associated with each customer for an easier and faster payment experience.  
**Attributes** – (Cust\_ID, balance, reward\_points, upi\_id)  
**Reason for weak entity** - The Wallet entity doesn't have a unique identifier (primary key) of its own. It relies on the association with the Customer entity for identification, and it wouldn't exist without a corresponding customer.
- **Product\_review** - Represents feedback provided by customers for products, including ratings and comments.  
**Attributes** – (productreview\_ID, Order\_ID, cust\_ID, comment, rating)  
**Reason for weak entity** - The Product\_Review entity doesn't have an independent primary key. Its existence is tied to both the Customer and Product entities, as it represents a review given by a customer for a specific product. It is uniquely identified only within the context of a particular customer and product combination.
- **Delivery\_review** - Represents reviews and ratings provided by customers for the delivery service.  
**Attributes** – (deliveryreview\_ID, Order\_ID, D\_ID, comment, rating, tip)  
**Reason for weak entity** - The Delivery\_Review entity relies on both the Customer and DeliveryPartner entities for identification. It represents a review given by a customer for a specific delivery service. A Delivery\_Review is uniquely identified only within the context of a particular customer and delivery partner combination. It doesn't have an independent identity.

## 4 Entity Relationship Roles and Constraints

- **Manages:** Admin *manages* product, product categories, and store.
- **Contains:** A store can *contain* multiple products and a product can belong to multiple stores.
- **Adds to Cart:** Cart represents the relationship between customer and product. A customer can add multiple products to the cart and A particular product can be bought by multiple customers.
- **places:** A customer can *place* multiple orders and An order belongs to a particular customer.
- **Belongs to :** A product *belongs to* a particular product category and a product category can contain multiple products.
- **fulfils:** An Order is *fulfilled* by a Delivery Agent and a delivery agent can fulfil only 1 order at a time
- **consists of:** An order *consists of* multiple products and a product may belong to multiple products which may belong to various customers.
- **Belongs to:** A delivery agent Wallet *belongs to* a particular delivery agent.
- **Belongs to:** A Wallet *belongs to* a particular customer.
- **Rates:** A customer *rates* an order.
- **purchases:** A customer can *purchase* multiple products and a product review is associated with it.
- **Contains:** A store can *contain* multiple products and product categories and correspondingly different product categories and products may belong to multiple stores.

## 5 Relationships

### 5.1 Ternary Relationships

#### 5.1.1 Customer - Order - Delivery Review

The above 3 entities are associated together using a relation rate in which a customer rates an order i.e. a delivery review is associated with it. The ternary relationship between the 3 can be broken down into binary relationships listed below.

- **Customer - Order (One-Many):** A customer can place many orders but an order is associated with only one customer.
- **Customer - Delivery Review (One-Many):** A customer can give multiple delivery review (for each order they place) but an Delivery Review is associated with only one customer.
- **Order - Delivery Review (One-One):** A delivery review is given once per order, An order only has one delivery review associated with it.

#### 5.1.2 Customer - Product - Product Review

The above 3 entities are associated together using a relation purchase in which a customer purchases a product and a product review is associated with it. The ternary relationship between the 3 can be broken down into binary relationships listed below.

- **Customer - Product (Many - Many) :** A customer can add multiple products to cart, A product can be present in multiple user's cart.
- **Product - Product Review (One - Many) :** A product has multiple product reviews, But a product review has only one product associated with it.
- **Customer - Product Review (One - Many) :** A customer gives multiple product reviews (for each different product purchased), But product review has only one customer associated with it.

### 5.2 Many to Many Relationship

- Product and Store
- Product and Order
- Product and Admin
- Admin and Product Category
- Customer and Product
- Product Category and Store

### 5.3 One to Many/Many to One Relationship

- Customer and Order
- Customer and Product Review
- Product and Product Category

### 5.4 One to One Relationship

- Customer and Wallet
- Customer and Delivery Review
- Admin and Store
- Delivery Agent and Wallet
- Order and Delivery Agent

## 6 Contribution

With discussions and meets we together made up the ER Model and Relational Model for this deadline.