

Quantum Basket

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Entity Sets →

The following entities along with attributes are identified & will be used in the project :-

1. Customer: Represents individuals who interact with Quantum Basket, storing their personal information such as name, contact details, and address for efficient order processing and personalized service.
2. Manager: Manages a warehouse, overseeing its operations, and is associated with performance metrics like ratings, salary, and joining date, ensuring efficient management of Quantum Basket's inventory.
3. Warehouse: Defines the physical storage space for products, linking to a manager for supervision, and maintaining location details to facilitate smooth logistics within Quantum Basket.
4. Items: Encompasses the details of products available in Quantum Basket, including information such as name, category, price, and stock availability for efficient cataloging and customer order fulfillment.
5. Cart: Represents the temporary storage of selected items by a customer, tracking details like quantity, discounts, and creation date until the checkout process is completed.
6. Head Office: Serves as the central hub for Quantum Basket, linking various aspects of the business, including customers, managers, orders, and discounts, facilitating centralized control and coordination.
7. Discount: Manages promotional offers and discounts, controlling pricing based on percentages or fixed amounts, with defined start and end dates, enhancing Quantum Basket's marketing strategy.
8. Order: Captures details of customer transactions, linking to a cart, payment mode, and order status, providing a comprehensive overview of Quantum Basket's sales activities.

9. Delivery Partner: Represents individuals responsible for delivering orders to customers, tracking their availability status, and maintaining ratings and feedback for performance evaluation within Quantum Basket's delivery system.
10. Order Feedback: Gathers customer feedback and complaints specific to orders, aiding Quantum Basket in improving its service quality and addressing issues promptly.
11. Delivery Feedback: Records customer feedback and complaints related to the delivery process, allowing Quantum Basket to enhance the efficiency and reliability of its delivery partners.

Relationships with cardinality (Schemas for Relations) →

To effectively manage the database, we will be using the following relationships among the data:-

1. Customer PAYS FOR Order: Customers make payments for their orders, with a one-to-many cardinality, indicating that each customer can make multiple payments for different orders.
2. Customer REGISTERS Head Office: Customers register with the head office, reflecting a one-to-many relationship, where a single customer can register with the head office for multiple purposes or services.
3. Cart BELONGS TO Customer: Carts are associated with individual customers, with a one-to-many relationship, signifying that a customer can have multiple shopping carts over different sessions.
4. Discount APPLIES TO Cart (Multiple Discounts Applicable): Discounts are applied to shopping carts, allowing for multiple discounts to be associated with a single cart, creating a many-to-many relationship.
5. Head Office SETS Discount: The head office sets discounts, showcasing a one-to-many relationship, where a single discount can be applied to multiple shopping carts.
6. Head Office OVERSEES Warehouse: The head office oversees multiple warehouses, reflecting a one-to-many relationship, as each warehouse is managed by the head office.
7. Head Office CONTROLS Managers (Multiple Managers): The head office controls multiple managers, indicating a one-to-many relationship, where each manager is under the supervision of the head office.
8. Manager MANAGES Warehouse: Managers are responsible for managing individual warehouses, forming a one-to-one relationship, where each manager oversees one warehouse.

9. Warehouse SUPPLIES Items: Warehouses supply items to Quantum Basket, with a many-to-many relationship, signifying that each warehouse can supply multiple items.
10. Customer WRITES Feedback: Customers provide feedback, establishing a one-to-many relationship, as each customer can write feedback for various orders or experiences.
11. Manager CHECKS Feedback: Managers check and review feedback, indicating a one-to-many relationship, where each manager can assess feedback from multiple customers.
12. Items ADDED TO Cart: Items are added to shopping carts, depicting a many-to-many relationship, as multiple items can be added to different carts, and a cart can contain multiple items.
13. Manager EMPLOYS DeliveryPartners: Managers employ delivery partners, representing a one-to-many relationship, where each manager can oversee the employment of multiple delivery partners.

There are 3 ternary relationships -

Customer - Order - Delivery Agent

The above 3 entities are associated together using a relation 'delivers' in which a delivery agent delivers an order of a customer. The ternary relationship between the 3 can be broken down into binary relationships listed below.

- Customer - Order (One-One): Only one order is being delivered to one customer at a time.
- Customer - Delivery Agent (One-One): One delivery agent is assigned to one customer for delivery.
- Order - Delivery Agent (One-One): One delivery agent is assigned per order and an order only has one delivery agent associated with it.

Customer - Order - Delivery Feedback

The above 3 entities are associated together using a relation 'writes' in which a customer gives a feedback for an order. The ternary relationship between the 3 can be broken down into binary relationships listed below.

- Customer - Order (One-One): A customer can write a particular feedback for only one order at a time.
- Customer - Delivery_Feedback (One-One): A customer can give one feedback for a particular order.
- Order - Delivery_Feedback (One-One): A delivery feedback is given once per order, An order only has one delivery feedback associated with it.

Customer - Order - Order Feedback

The above 3 entities are associated together using a relation 'writes' in which a customer writes an order review associated with an order. The ternary relationship between the 3 can be broken down into binary relationships listed below.

- Customer - Order (One-One) : A customer can write a particular feedback for only one order at a time.
- Customer - Delivery_Feedback (One-One): A customer can give one feedback for a particular order.
- Order - Order_Feedback (One - One) : An order feedback is given once per order, An order only has one order feedback associated with it.

Contributions

Souparno Ghose 2022506- ER model, Relational Model and explanation

Rishima Chadha 2022404- ER model, Relational Model

Vedika Agarwal 2022566 - ER model and explanation

Bhavy Chawla 2022594 - Relational Model and explanation



