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20240045

Database

1.Entities

Customer (Customer ID, Name, Email, Phone)

Order (Order ID, Order date, Total Amount, Customer ID as foreign key)

\Relationship

A customer places order (one-to-many relationship)

Description

The ER diagram models a retail store where customers place orders. The customer entity includes attributes such as CustomerID, name, email, and phone, which uniquely identify and describe each customer. The order entity stores information about purchases, including order ID, order date, and total amount. To maintain the link between customers and their purchases, the customer ID is included as a foreign key in the order table. The relationship between customer and order is one-to-many since a single customer can place multiple orders overtime, while each order must be associated with exactly one customer. This ER model helps organize retail store operations by connecting customer details with transaction records. It enables effective tracking of customer purchasing history, order trends, and business performance. With this model, managers can easily retrieve information such as which customer placed a certain order, how many orders a customer has made, and total revenue from specific customers.

2.Customer table

Primary key: CustomerID

CustomerID	Name	Email
C001	Kabelo Mobe	Kabelomobe47@gmail.com
C002	Thabo Lereho	Thabolereho18@gmail.com
C003	Lineo Litsebe	Lineolitsebe32@gmail.com

Order table

Primary key: OrderID

Foreign key: CustomerID

Order ID	Order date	Total amount	Customer ID
0101	2025-08-01	250.00	C001
0102	2025-08-04	100.00	C002
0103	2025-08-15	300.00	C002

3.The relational model organizes data into tables with rows and columns, using primary and foreign keys to define relationships. It is highly flexible, supports complex queries with SQL, and is widely used in modern applications such as banking, e-commerce, and education systems. In contrast, the hierarchical model arranges data in a tree-like structure, where each parent node has child nodes. It is efficient for applications with fixed relationships, such as file systems or organizational charts, but less flexible for dynamic or complex queries. Overall, the relational model is more adaptable and widely applicable compared to the hierarchical model.

4.The Entity-Relationship (ER) model is a conceptual framework for designing databases. It identifies entities (objects such as students, products, or employees), their attributes (characteristics like name, ID, or price), and the relationships between entities (e.g., a student enrolls in a course). The ER model uses diagrams to visually represent these components, making database design more structured and easier to understand. A real-world application of the ER model is in hospital management systems, where entities like patient, Doctor, and appointment are connected to efficiently store, retrieve, and manage patient records, schedules, and treatment histories.