

E-commerce Store Database: A Comprehensive Overview

An e-commerce store database is the backbone of any online business. It stores and manages critical information related to products, customers, orders, and more. A well-designed database ensures smooth operations, efficient data management, and a seamless shopping experience for customers.

Core Components of an E-commerce Database

1. Product Information:

- Product ID (Primary Key)
- Product Name
- Description
- Price
- Quantity in Stock
- Category
- Subcategory
- Brand
- Image URL
- Attributes (e.g., color, size, material)

2. Customer Information:

- Customer ID (Primary Key)
- First Name
- Last Name
- Email Address
- Phone Number
- Shipping Address
- Billing Address
- Password Hash

3. Orders:

- Order ID (Primary Key)
- Customer ID (Foreign Key)
- Order Date
- Shipping Address
- Billing Address
- Order Status (e.g., pending, processing, shipped, delivered)

- Payment Method
- Total Amount

4. **Order Items:**

- Order ID (Foreign Key)
- Product ID (Foreign Key)
- Quantity
- Price
- Total Price

5. **Cart:**

- Cart ID (Primary Key)
- Customer ID (Foreign Key)
- Product ID (Foreign Key)
- Quantity

□ **Products Table:**

- Stores information about each product available in the store.
- **Key Fields:**
 - product_id (Primary Key): Unique identifier for each product.
 - product_name: Name of the product.
 - description: Detailed description of the product.
 - price: Price of the product.
 - quantity_in_stock: Current stock level of the product.
 - category: Product category (e.g., electronics, clothing, books).
 - subcategory: More specific product category (e.g., smartphones, t-shirts, fiction).
 - brand: Brand of the product.
 - image_url: URL of the product image.
 - attributes: Additional product attributes (e.g., color, size, material).

□ **Customers Table:**

- Stores information about customers who have accounts on the website.

- **Key Fields:**

- customer_id (Primary Key): Unique identifier for each customer.
- first_name: Customer's first name.
- last_name: Customer's last name.
- email_address: Customer's email address.
- phone_number: Customer's phone number.
- shipping_address: Customer's shipping address.
- billing_address: Customer's billing address.
- password_hash: Hashed password for customer's account.

- **Orders Table:**

- Stores information about customer orders.

- **Key Fields:**

- order_id (Primary Key): Unique identifier for each order.
- customer_id (Foreign Key): References the customer_id in the Customers table.
- order_date: Date when the order was placed.
- shipping_address: Shipping address for the order.
- billing_address: Billing address for the order.
- order_status: Current status of the order (e.g., pending, processing, shipped, delivered).
- payment_method: Payment method used for the order.
- total_amount: Total amount of the order.

- **Order Items Table:**

- Stores information about the individual items within an order.

- **Key Fields:**

- order_id (Foreign Key): References the order_id in the Orders table.
- product_id (Foreign Key): References the product_id in the Products table.
- quantity: Quantity of the product ordered.
- price: Price of the product at the time of the order.
- total_price: Total price of the item (quantity * price).

- **Cart Table:**

- Stores information about products added to a customer's shopping cart before checkout.

- **Key Fields:**

- cart_id (Primary Key): Unique identifier for each cart.
- customer_id (Foreign Key): References the customer_id in the Customers table.
- product_id (Foreign Key): References the product_id in the Products table.
- quantity: Quantity of the product added to the cart.

- **PRIMARY KEY:** Uniquely identifies a row within a table.
- **NOT NULL:** Ensures that a column cannot contain null values.
- **UNIQUE:** Ensures that a column or set of columns contains unique values.
- **FOREIGN KEY:** References a primary key in another table, establishing a relationship between the two tables.