### **ERD Description**

### 1. Users

- user id (PK) Unique identifier
- first name User's first name
- last name User's last name
- email User's email address
- password Hashed password
- created at Account creation date
- role Enum (customer, business, administrator)
- shopping\_cart (JSON or serialized collection) Array of product objects with:
  - o product id ID of the product in the cart
  - unit price Price at the time added to the cart
  - quantity Quantity added
- transactions (JSON or serialized collection) Array of transaction IDs linked to the user
- addresses (JSON or serialized collection) Array of address objects with:
  - address id Unique identifier for the address
  - street Street name and number
  - o city City name
  - o state State or province
  - postal code ZIP or postal code
  - o country Country name
  - isDefault Boolean (true if the current address is the default)
- payment methods (JSON or serialized collection) Array of payment method objects with:
  - o payment id Unique identifier for the payment method
  - o card number Masked card number (e.g., \*\*\*\* \*\*\*\* 1234)

- expiry\_date Card expiration date
- payment\_type Enum (credit\_card, debit\_card, paypal, etc.)
- o isDefault Boolean (true if it is the default payment method)
- privileges (JSON object of objects) Object containing multiple privilege objects as properties, with, for example:
  - shopping:
    - isGranted Boolean (true if the privilege is granted, false if revoked)
    - description Description of the privilege
    - granted by user id of the admin or business that granted the privilege
    - granted\_at Date and time the privilege was granted

# **✓** Possible Privileges:

- shopping Allows the user to make purchases
- productManagement Allows the user to manage products
- userManagement Allows the user to manage other users
- reporting Grants access to reports and analytics
- discountManagement Allows the user to create and modify discount codes
- orderFulfillment Grants the ability to process and fulfill orders
- customerSupport Allows access to customer support tools
- marketing Grants access to marketing campaigns

**✓** Privileges JSON Example:

```
"shopping": {
    "isGranted": true,
    "description": "Allows the user to make purchases",
    "granted_by": "admin_123",
    "granted_at": "2025-03-20T10:45:00Z"
  },
  "productManagement": {
    "isGranted": false,
    "description": "Allows the user to manage products",
    "granted_by": "admin_456",
    "granted_at": "2025-03-20T11:30:00Z"
  },
  "userManagement": {
    "isGranted": true,
    "description": "Allows the user to manage other users",
    "granted_by": "admin_789",
    "granted_at": "2025-03-21T09:15:00Z"
  },
  "reporting": {
    "isGranted": true,
    "description": "Grants access to reports and analytics",
    "granted_by": "admin_456",
    "granted_at": "2025-03-22T14:00:00Z"
  }
}
```

## 2. Products

- product\_id (PK) Unique identifier
- name Product name
- description (JSON object) Object with:
  - short Short description for preview displays
  - long Detailed description for the product page
  - o specs Specifications (e.g., dimensions, weight, color)
  - features Array of key product features
- price Current product price
- stock\_quantity Available stock
- category\_id (FK) Links to Categories
- business\_id (FK) Links to the business that sells the product

```
Example of the description field in JSON format:
  "short": "High-quality wireless headphones",
  "long": "These wireless headphones offer exceptional sound quality with noise cancellation, long battery life, and a comfortable
fit.",
  "specs": {
     "battery_life": "20 hours",
     "weight": "250g",
     "color": "black"
  },
  "features": [
     "Bluetooth 5.0",
     "Noise cancellation",
     "Fast charging"
}
```

## 3. Categories

- category\_id (PK) Unique identifier
- category\_name Name of the category
- description Detailed description of the category

### 4. Transactions

- transaction id (PK) Unique identifier
- user\_id (FK) Links to Users
- total\_amount Total amount paid
- payment\_method\_id References the payment method used
- transaction\_date Date and time of purchase
- shipping\_address\_id References the shipping address
- billing\_address\_id References the billing address (defaults to the shipping address but can be different)
- products (JSON or serialized collection) Array of product objects with:
  - product\_id ID of the product purchased
  - o unit price Price at the time of purchase
  - quantity Quantity purchased
- tracking\_status (Stack collection of tracking objects) Array of tracking objects representing the delivery status stack, for example:
  - o tracking id Unique identifier for the tracking event
  - status Enum (purchased, shipped, in\_transit, out\_for\_delivery, delivered, cancelled by customer or admin, return, returned by customer.)
  - o status date Date and time of the status update
  - latitude Google Maps latitude coordinate
  - o longitude Google Maps longitude coordinate